

**Experiment Number:** 88034-07

**Test Type:** CHRONIC

**Route:** SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY

**Species/Strain:** Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

**Test Compound:** Ozone/NNK

**CAS Number:** OZONNNKCOMB

**Date Report Requested:** 10/21/2014

**Time Report Requested:** 05:28:17

**First Dose M/F:** NA / NA

**Lab:** BNW

<b>C Number:</b>	C88034C
<b>Lock Date:</b>	02/17/1993
<b>Cage Range:</b>	All
<b>Date Range:</b>	All
<b>Reasons For Removal:</b>	All
<b>Removal Date Range:</b>	All
<b>Treatment Groups:</b>	All
<b>Study Gender:</b>	Male
<b>PWG Approval Date</b>	10/05/1993

Experiment Number: 88034-07

Test Type: CHRONIC

Route: SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY

Species/Strain: Rat/F 344/N

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Test Compound: Ozone/NNK

CAS Number: OZONNNKCOMB

Date Report Requested: 10/21/2014

Time Report Requested: 05:28:17

First Dose M/F: NA / NA

Lab: BNW

ANIMAL ID: 8001

TRT#: 1

SEX: Male

DAY ON TEST: 543

DOSE: TRIOCT./AIR

DISP: Moribund Sacrifice

HISTO: 26189

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

\* Trachea

OBSERVATIONS

* Larynx		Inflammation	Suppurative, Minimal
* Lung		Leukemia Mononuclear	
	[ Leukemia Mononuclear TGLS = 2-3 ]		
* Lymph Node, Bronchial		Leukemia Mononuclear	
Lymph Node, Mandibular		Leukemia Mononuclear	
	[ Leukemia Mononuclear TGLS = 1-7 ]		
* Lymph Node, Mediastinal		Leukemia Mononuclear	
* Nose	Olfactory Epi	Degeneration	Hyaline, Minimal
Pituitary Gland	Pars Distalis	Adenoma	
		Leukemia Mononuclear	
	[ Adenoma TGLS = 3-8 ]		
Preputial Gland		Inflammation	Suppurative, Marked
	[ Inflammation TGLS = 4-9 ]		
Skin	SOA, Subcut Tiss	Inflammation	Chronic, Minimal
	[ Inflammation TGLS = 8-6 ]		
Spleen		Leukemia Mononuclear	
	[ Leukemia Mononuclear TGLS = 6,7-7 ]		
Testes		Atrophy	Marked
	[ Atrophy TGLS = 5-3 ]		

PRIMARY CAUSE OF DEATH - Spleen Leukemia Mononuclear

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 88034-07

Test Type: CHRONIC

Route: SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY

Species/Strain: Rat/F 344/N

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Test Compound: Ozone/NNK

CAS Number: OZONNNKCOMB

Date Report Requested: 10/21/2014

Time Report Requested: 05:28:17

First Dose M/F: NA / NA

Lab: BNW

ANIMAL ID: 8002

TRT#: 1

SEX: Male

DAY ON TEST: 700

DOSE: TRIOCT./AIR

DISP: Moribund Sacrifice

HISTO: 26190

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

\* Larynx

\* Lymph Node, Bronchial

\* Lymph Node, Mediastinal

\* Trachea

OBSERVATIONS

Blood Vessel [ Mineralization TGLS = 3-11 ]	Aorta	Mineralization	Moderate
Heart [ Mineralization TGLS = 4-8 ]		Mineralization	Marked
Intestine Large, Colon [ Mineralization TGLS = 13-10 ]		Mineralization	Moderate
Kidney [ Nephropathy TGLS = 8-9 ]		Nephropathy	Marked
Liver [ Infiltration Cellular TGLS = 7-8 ]		Infiltration Cellular	Mixed Cell, Minimal
* Lung [ Mineralization TGLS = 5-3 ]		Mineralization	Marked
* Nose	Olfactory Epi Lateral Wall	Degeneration Hyperplasia Hyperplasia	Hyaline, Minimal Mild Moderate
Parathyroid Gland [ Hyperplasia TGLS = 2-8 ]			
Peritoneum [ Inflammation TGLS = 10-6 ]		Inflammation	Chronic, Minimal
Pituitary Gland [ Adenoma TGLS = 6-8 ]	Pars Distalis	Adenoma	
Skin [ Inflammation TGLS = 11-7 ]	SOA, Subcut Tiss	Inflammation	Chronic, Minimal
Spleen [ Fibrosis TGLS = 9-10 ]		Fibrosis	Mild
Stomach, Forestomach [ Mineralization TGLS = 12-10 ]		Mineralization	Moderate
Stomach, Glandular		Mineralization	Moderate

\* PROTOCOL REQUIRED TISSUE

**Experiment Number:** 88034-07

**Test Type:** CHRONIC

**Route:** SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY

**Species/Strain:** Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

**Test Compound:** Ozone/NNK

**CAS Number:** OZONNNKCOMB

**Date Report Requested:** 10/21/2014

**Time Report Requested:** 05:28:17

**First Dose M/F:** NA / NA

**Lab:** BNW

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**ANIMAL ID:** 8002

**TRT#:** 1

**SEX:** Male

**DAY ON TEST:** 700

**DOSE:** TRIOCT./AIR

**DISP:** Moribund Sacrifice

**HISTO:** 26190

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**ORGAN AND ACCOUNTABLE SITE STATUS**

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**PRIMARY CAUSE OF DEATH**

- Kidney Nephropathy

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\* PROTOCOL REQUIRED TISSUE

Experiment Number: 88034-07

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Date Report Requested: 10/21/2014

Test Type: CHRONIC

Test Compound: Ozone/NNK

Time Report Requested: 05:28:17

Route: SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY

CAS Number: OZONNNKCOMB

First Dose M/F: NA / NA

Species/Strain: Rat/F 344/N

Lab: BNW

ANIMAL ID: 8003

TRT#: 1

SEX: Male

DAY ON TEST: 700

DOSE: TRIOCT./AIR

DISP: Moribund Sacrifice

HISTO: 26191

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

\* Larynx \* Trachea

OBSERVATIONS

Kidney		Nephropathy	Moderate
Note: TGL 10 is the typical focal chronic inflammatory lesion due to vehicle injection. It is in retroperitoneal fat not kidney; therefore coded under peritoneum.			
[ Nephropathy TGLS = 5-11 ]			
Liver		Cholangiocarcinoma Necrosis	Moderate
[ Cholangiocarcinoma TGLS = 1-13 ]			
[ Necrosis TGLS = 3-12 ]			
* Lung		Cholangiocarcinoma	Metastatic (Liver)
[ Cholangiocarcinoma TGLS = 2-6 ]			
Lymph Node	Iliac Renal	Infiltration Cellular Infiltration Cellular	Plasma Cell, Mild Plasma Cell, Moderate
[ Infiltration Cellular TGLS = 8-9 ]			
[ Infiltration Cellular TGLS = 7-8 ]			
* Lymph Node, Bronchial		Hemorrhage	Mild
* Lymph Node, Mediastinal		Infiltration Cellular	Plasma Cell, Mild
* Nose	Olfactory Epi	Degeneration	Hyaline, Minimal
Peritoneum		Inflammation	Chronic, Minimal
[ Inflammation TGLS = 10-11 ]			
Pituitary Gland	Pars Distalis	Adenoma	
[ Adenoma TGLS = 4-10 ]			
Skin	SOA, Subcut Tiss	Inflammation	Chronic, Minimal
[ Inflammation TGLS = 9-7 ]			
Spleen		Fibrosis	Mild
[ Fibrosis TGLS = 6-10 ]			

PRIMARY CAUSE OF DEATH - Liver Cholangiocarcinoma

\* PROTOCOL REQUIRED TISSUE

**Experiment Number:** 88034-07

**Test Type:** CHRONIC

**Route:** SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY

**Species/Strain:** Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

**Test Compound:** Ozone/NNK

**CAS Number:** OZONNNKCOMB

**Date Report Requested:** 10/21/2014

**Time Report Requested:** 05:28:17

**First Dose M/F:** NA / NA

**Lab:** BNW

**ANIMAL ID:** 8004

**TRT#:** 1

**SEX:** Male

**DAY ON TEST:** 736

**DOSE:** TRIOCT./AIR

**DISP:** Terminal Sacrifice

**HISTO:** 26192

**ORGAN AND ACCOUNTABLE SITE STATUS**

**NORMAL**

* Larynx	* Lung	* Lymph Node, Bronchial	* Lymph Node, Mediastinal
* Trachea			

**OBSERVATIONS**

* Nose	Olfactory Epi	Degeneration	Hyaline, Minimal
Peritoneum		Inflammation	Chronic, Minimal
[ Inflammation TGLS = 3-6 ]			
Skin	SOA, Subcut Tiss	Inflammation	Chronic, Minimal
[ Inflammation TGLS = 4-7 ]			
Spleen		Leukemia Mononuclear	
[ Leukemia Mononuclear TGLS = 1,2-8+9 ]			

PRIMARY CAUSE OF DEATH

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\* PROTOCOL REQUIRED TISSUE

Experiment Number: 88034-07

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Date Report Requested: 10/21/2014

Test Type: CHRONIC

Test Compound: Ozone/NNK

Time Report Requested: 05:28:17

Route: SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY

CAS Number: OZONNNKCOMB

First Dose M/F: NA / NA

Species/Strain: Rat/F 344/N

Lab: BNW

ANIMAL ID: 8005

TRT#: 1

SEX: Male

DAY ON TEST: 638

DOSE: TRIOCT./AIR

DISP: Natural Death

HISTO: 26193

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

\* Larynx \* Trachea

OBSERVATIONS

Kidney		Nephropathy	Mild
[ Nephropathy TGLS = 5-10 ]			
Liver		Hyperplasia	Focal, Marked
[ Hyperplasia TGLS = 3-8 ]		Leukemia Mononuclear	
[ Leukemia Mononuclear TGLS = 4-8 ]			
* Lung		Leukemia Mononuclear	
* Lymph Node, Bronchial		Leukemia Mononuclear	
Lymph Node, Mandibular		Leukemia Mononuclear	
[ Leukemia Mononuclear TGLS = 1-8 ]			
* Lymph Node, Mediastinal		Hemorrhage	Marked
[ Leukemia Mononuclear TGLS = 2-2 ]		Leukemia Mononuclear	
Mesentery	Fat	Necrosis	Moderate
[ Necrosis TGLS = 10-10 ]			
* Nose	Olfactory Epi	Degeneration	Hyaline, Minimal
Peritoneum		Inflammation	Chronic, Minimal
[ Inflammation TGLS = 8-7 ]			
Skin	SOA, Subcut Tiss	Inflammation	Chronic, Minimal
[ Inflammation TGLS = 9-6 ]			
Spleen		Leukemia Mononuclear	
[ Leukemia Mononuclear TGLS = 6-9 ]			
Testes	Interstit Cell	Adenoma	
[ Adenoma TGLS = 7-9 ]			

PRIMARY CAUSE OF DEATH - Spleen Leukemia Mononuclear

\* PROTOCOL REQUIRED TISSUE

**Experiment Number:** 88034-07

**Test Type:** CHRONIC

**Route:** SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY

**Species/Strain:** Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

**Test Compound:** Ozone/NNK

**CAS Number:** OZONNNKCOMB

**Date Report Requested:** 10/21/2014

**Time Report Requested:** 05:28:17

**First Dose M/F:** NA / NA

**Lab:** BNW

**ANIMAL ID:** 8006

**TRT#:** 1

**SEX:** Male

**DAY ON TEST:** 540

**DOSE:** TRIOCT./AIR

**DISP:** Moribund Sacrifice

**HISTO:** 26194

**ORGAN AND ACCOUNTABLE SITE STATUS**

**NORMAL**

Adrenal Cortex

\* Larynx

\* Lung

\* Lymph Node, Mediastinal

\* Trachea

**MISSING**

\* Lymph Node, Bronchial

**OBSERVATIONS**

Adrenal Medulla

Pheochromocytoma Malignant

[ Pheochromocytoma Malignant TGLS = 2-7 ]

\* Nose

Olfactory Epi

Degeneration

Hyaline, Minimal

Skin

SOA, Subcut Tiss

Inflammation

Chronic, Minimal

[ Inflammation TGLS = 3-6 ]

Testes

Atrophy

Moderate

[ Atrophy TGLS = 1-7 ]

**PRIMARY CAUSE OF DEATH**

- Adrenal Medulla Pheochromocytoma Malignant

\* PROTOCOL REQUIRED TISSUE



Experiment Number: 88034-07

Test Type: CHRONIC

Route: SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY

Species/Strain: Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

Test Compound: Ozone/NNK

CAS Number: OZONNNKCOMB

Date Report Requested: 10/21/2014

Time Report Requested: 05:28:17

First Dose M/F: NA / NA

Lab: BNW

ANIMAL ID: 8007

TRT#: 1

SEX: Male

DAY ON TEST: 589

DOSE: TRIOCT./AIR

DISP: Moribund Sacrifice

HISTO: 26195

**ORGAN AND ACCOUNTABLE SITE STATUS**

**NORMAL**

\* Larynx \* Trachea

**MISSING**

\* Lymph Node, Bronchial

**OBSERVATIONS**

Liver		Leukemia Mononuclear	
[ Leukemia Mononuclear TGLS = 3-10 ]			
* Lung		Leukemia Mononuclear	
Lymph Node	Renal	Infiltration Cellular	Plasma Cell, Mild
[ Infiltration Cellular TGLS = 6-8 ]			
* Lymph Node, Mediastinal		Leukemia Mononuclear	
* Nose	Olfactory Epi	Degeneration	Hyaline, Minimal
Peritoneum		Inflammation	Chronic, Minimal
[ Inflammation TGLS = 5-7 ]			
Pituitary Gland	Pars Distalis	Adenoma	
[ Adenoma TGLS = 4-10 ]			
Skin	SOA, Subcut Tiss	Inflammation	Chronic, Minimal
[ Inflammation TGLS = 7-6 ]			
Spleen		Leukemia Mononuclear	
[ Leukemia Mononuclear TGLS = 2-9 ]			

PRIMARY CAUSE OF DEATH - Spleen Leukemia Mononuclear

\* PROTOCOL REQUIRED TISSUE

**Experiment Number:** 88034-07

**Test Type:** CHRONIC

**Route:** SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY

**Species/Strain:** Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

**Test Compound:** Ozone/NNK

**CAS Number:** OZONNNKCOMB

**Date Report Requested:** 10/21/2014

**Time Report Requested:** 05:28:17

**First Dose M/F:** NA / NA

**Lab:** BNW

**ANIMAL ID:** 8008

**TRT#:** 1

**SEX:** Male

**DAY ON TEST:** 611

**DOSE:** TRIOCT./AIR

**DISP:** Moribund Sacrifice

**HISTO:** 26196

**ORGAN AND ACCOUNTABLE SITE STATUS**

**NORMAL**

* Larynx	* Lung	* Lymph Node, Bronchial	* Lymph Node, Mediastinal
* Trachea			

**OBSERVATIONS**

* Nose	Olfactory Epi	Degeneration	Hyaline, Minimal
Peritoneum		Inflammation	Chronic, Minimal
[ Inflammation TGLS = 2-6 ]			
Pituitary Gland	Pars Distalis	Adenoma	
[ Adenoma TGLS = 1-8 ]			
Skin	SOA, Subcut Tiss	Inflammation	Chronic, Minimal
[ Inflammation TGLS = 3-7 ]			

**PRIMARY CAUSE OF DEATH**

- Pituitary Gland Pars Distalis Adenoma

\* PROTOCOL REQUIRED TISSUE

**Experiment Number:** 88034-07

**Test Type:** CHRONIC

**Route:** SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY

**Species/Strain:** Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

**Test Compound:** Ozone/NNK

**CAS Number:** OZONNNKCOMB

**Date Report Requested:** 10/21/2014

**Time Report Requested:** 05:28:17

**First Dose M/F:** NA / NA

**Lab:** BNW

**ANIMAL ID:** 8009

**TRT#:** 1

**SEX:** Male

**DAY ON TEST:** 562

**DOSE:** TRIOCT./AIR

**DISP:** Moribund Sacrifice

**HISTO:** 26197

**ORGAN AND ACCOUNTABLE SITE STATUS**

**NORMAL**

\* Larynx

\* Lung

\* Lymph Node, Mediastinal

\* Trachea

**MISSING**

\* Lymph Node, Bronchial

**OBSERVATIONS**

\* Lung

Note: TGL #1 (lung, bilateral red) is due to distention of the pulmonary vasculature with blood, probably an agonal change. Thus NCL was entered on the IANR form.

\* Lym Node Media

Note: No lesion corresponding to TGL 2 was observed upon microscopic exam of mediastinal lymph node, thus NCL was entered on IANR form.

\* Nose

Olfactory Epi

Degeneration

Hyaline, Minimal

Pituitary Gland

Pars Distalis

Adenoma

[ Adenoma TGLS = 3-7 ]

Skin

SOA, Subcut Tiss

Inflammation

Chronic, Minimal

[ Inflammation TGLS = 5-6 ]

**PRIMARY CAUSE OF DEATH**

- Pituitary Gland Pars Distalis Adenoma

\* PROTOCOL REQUIRED TISSUE

**Experiment Number:** 88034-07

**Test Type:** CHRONIC

**Route:** SUBCUTANEOUS|RESPIRATORY  
**EXPOSURE** WHOLE BODY

**Species/Strain:** Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

**Test Compound:** Ozone/NNK

**CAS Number:** OZONNNKCOMB

**Date Report Requested:** 10/21/2014

**Time Report Requested:** 05:28:17

**First Dose M/F:** NA / NA

**Lab:** BNW

**ANIMAL ID:** 8010

**TRT#:** 1

**SEX:** Male

**DAY ON TEST:** 698

**DOSE:** TRIOCT./AIR

**DISP:** Moribund Sacrifice

**HISTO:** 26198

**ORGAN AND ACCOUNTABLE SITE STATUS**

**NORMAL**

\* Larynx

\* Trachea

**MISSING**

\* Lymph Node, Bronchial

**OBSERVATIONS**

Kidney		Nephropathy	Marked
[ Nephropathy TGLS = 6-10 ]			
Liver		Leukemia Mononuclear	
[ Leukemia Mononuclear TGLS = 3-11 ]			
* Lung		Leukemia Mononuclear	
[ Leukemia Mononuclear TGLS = 4-3 ]			
Lymph Node, Mandibular		Leukemia Mononuclear	
[ Leukemia Mononuclear TGLS = 1-9 ]			
* Lymph Node, Mediastinal		Leukemia Mononuclear	
* Nose	Olfactory Epi	Degeneration	Hyaline, Minimal
	Goblet Cell, Lateral Wall	Hyperplasia	Minimal
	Lateral Wall	Hyperplasia	Minimal
		Inflammation	Suppurative, Moderate
Peritoneum		Inflammation	Chronic, Minimal
[ Inflammation TGLS = 7-11 ]			
Skin	Subcut Tiss	Fibroma	
	SOA, Subcut Tiss	Inflammation	Chronic, Minimal
[ Fibroma TGLS = 9-8 ]			
[ Inflammation TGLS = 8-6 ]			
Spleen		Leukemia Mononuclear	
[ Leukemia Mononuclear TGLS = 5-9 ]			
Testes	Interstit Cell	Adenoma	
[ Adenoma TGLS = 10-9 ]			
Tongue		Squamous Cell Papilloma	
[ Squamous Cell Papilloma TGLS = 2-7 ]			

\* PROTOCOL REQUIRED TISSUE

**Experiment Number:** 88034-07

**Test Type:** CHRONIC

**Route:** SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY

**Species/Strain:** Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

**Test Compound:** Ozone/NNK

**CAS Number:** OZONNNKCOMB

**Date Report Requested:** 10/21/2014

**Time Report Requested:** 05:28:17

**First Dose M/F:** NA / NA

**Lab:** BNW

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**ANIMAL ID:** 8010

**TRT#:** 1

**SEX:** Male

**DAY ON TEST:** 698

**DOSE:** TRIOCT./AIR

**DISP:** Moribund Sacrifice

**HISTO:** 26198

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**ORGAN AND ACCOUNTABLE SITE STATUS**

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**PRIMARY CAUSE OF DEATH**

- Spleen Leukemia Mononuclear

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\* PROTOCOL REQUIRED TISSUE

Experiment Number: 88034-07

Test Type: CHRONIC

Route: SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY

Species/Strain: Rat/F 344/N

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Test Compound: Ozone/NNK

CAS Number: OZONNNKCOMB

Date Report Requested: 10/21/2014

Time Report Requested: 05:28:17

First Dose M/F: NA / NA

Lab: BNW

ANIMAL ID: 8011

TRT#: 1

SEX: Male

DAY ON TEST: 736

DOSE: TRIOCT./AIR

DISP: Terminal Sacrifice

HISTO: 26199

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

\* Larynx \* Trachea

OBSERVATIONS

Kidney [ Nephropathy TGLS = 6-11 ]		Nephropathy	Moderate
Liver [ Leukemia Mononuclear TGLS = 4,5-13 ]		Leukemia Mononuclear	
* Lung		Leukemia Mononuclear	
Lymph Node [ Inflammation TGLS = 7-10 ]	Pancreatic	Inflammation	Granulomatous, Mild
* Lymph Node, Bronchial		Leukemia Mononuclear	
* Lymph Node, Mediastinal		Leukemia Mononuclear	
Mesentery [ Necrosis TGLS = 1-9 ]	Fat	Necrosis	Moderate
* Nose	Olfactory Epi Goblet Cell, Lateral Wall Lateral Wall	Degeneration Hyperplasia Hyperplasia Inflammation	Hyaline, Minimal Minimal Minimal Chronic, Minimal
Peritoneum [ Inflammation TGLS = 9-6 ]			
Skin [ Fibroma TGLS = 8-14 ] [ Inflammation TGLS = 10-7 ] [ Keratoacanthoma TGLS = 11-8 ]	Subcut Tiss SOA, Subcut Tiss	Fibroma Inflammation Keratoacanthoma	Chronic, Minimal
Spleen [ Fibrosis TGLS = 3-12 ] [ Leukemia Mononuclear TGLS = 2-12 ]		Fibrosis Leukemia Mononuclear	Mild

PRIMARY CAUSE OF DEATH

-

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 88034-07

Test Type: CHRONIC

Route: SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY

Species/Strain: Rat/F 344/N

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Test Compound: Ozone/NNK

CAS Number: OZONNNKCOMB

Date Report Requested: 10/21/2014

Time Report Requested: 05:28:17

First Dose M/F: NA / NA

Lab: BNW

ANIMAL ID: 8012

TRT#: 1

SEX: Male

DAY ON TEST: 633

DOSE: TRIOCT./AIR

DISP: Moribund Sacrifice

HISTO: 26200

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

\* Larynx

\* Lung

\* Trachea

OBSERVATIONS

\* Lung

Note: NO MICROSCOPICALLY CORRESPONDING LESION FOR TGLs = 5-3.

Lymph Node

Iliac

Leukemia Mononuclear

Renal

Leukemia Mononuclear

[ Leukemia Mononuclear TGLS = 8-8 ]

[ Leukemia Mononuclear TGLS = 9-9 ]

\* Lymph Node, Bronchial

Leukemia Mononuclear

\* Lymph Node, Mediastinal

Leukemia Mononuclear

[ Leukemia Mononuclear TGLS = 4-2 ]

Mammary Gland

Galactocele

Moderate

[ Galactocele TGLS = 1-8 ]

Mesentery

Leukemia Mononuclear

[ Leukemia Mononuclear TGLS = 10-10 ]

\* Nose

Olfactory Epi

Degeneration

Hyaline, Minimal

Peritoneum

Inflammation

Chronic, Minimal

[ Inflammation TGLS = 11-7 ]

Pituitary Gland

Pars Distalis

Adenoma

[ Adenoma TGLS = 6-8 ]

Preputial Gland

Inflammation

Chronic Active, Mild

[ Inflammation TGLS = 2-9 ]

Skin

SOA, Subcut Tiss

Inflammation

Chronic, Minimal

[ Inflammation TGLS = 12-6 ]

PRIMARY CAUSE OF DEATH

- Pituitary Gland Pars Distalis Adenoma

\* PROTOCOL REQUIRED TISSUE

**Experiment Number:** 88034-07

**Test Type:** CHRONIC

**Route:** SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY

**Species/Strain:** Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

**Test Compound:** Ozone/NNK

**CAS Number:** OZONNNKCOMB

**Date Report Requested:** 10/21/2014

**Time Report Requested:** 05:28:17

**First Dose M/F:** NA / NA

**Lab:** BNW

**ANIMAL ID:** 8013

**TRT#:** 1

**SEX:** Male

**DAY ON TEST:** 736

**DOSE:** TRIOCT./AIR

**DISP:** Terminal Sacrifice

**HISTO:** 26201

**ORGAN AND ACCOUNTABLE SITE STATUS**

**NORMAL**

* Larynx	* Lung	* Lymph Node, Bronchial	* Lymph Node, Mediastinal
* Trachea			

**OBSERVATIONS**

Kidney		Nephropathy	Moderate
[ Nephropathy TGLS = 6-9 ]			
Liver		Hepatodiaphragmatic Nodule	
[ Hepatodiaphragmatic Nodule TGLS = 5-10 ]		Leukemia Mononuclear	
* Nose	Olfactory Epi	Degeneration	Hyaline, Minimal
	Lateral Wall	Hyperplasia	Minimal
Pituitary Gland	Pars Distalis	Adenoma	
[ Adenoma TGLS = 1-8 ]			
Skin	SOA, Subcut Tiss	Inflammation	Chronic, Minimal
[ Inflammation TGLS = 7-6 ]			
Spleen		Leukemia Mononuclear	
[ Leukemia Mononuclear TGLS = 4-8 ]			
Testes	Interstit Cell	Adenoma	
[ Adenoma TGLS = 2,3-7 ]			

**PRIMARY CAUSE OF DEATH**

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\* PROTOCOL REQUIRED TISSUE



Experiment Number: 88034-07

Test Type: CHRONIC

Route: SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY

Species/Strain: Rat/F 344/N

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Test Compound: Ozone/NNK

CAS Number: OZONNNKCOMB

Date Report Requested: 10/21/2014

Time Report Requested: 05:28:17

First Dose M/F: NA / NA

Lab: BNW

ANIMAL ID: 8014

TRT#: 1

SEX: Male

DAY ON TEST: 564

DOSE: TRIOCT./AIR

DISP: Natural Death

HISTO: 26202

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

\* Larynx \* Trachea

OBSERVATIONS

Eye		Cataract	Marked
	Ciliary Body, Retina	Degeneration	Marked
		Hemorrhage	Marked
[ Hemorrhage TGLS = 2-7 ]			
Intestine Large, Rectum		Polyp Adenomatous	
[ Polyp Adenomatous TGLS = 9-8 ]			
* Lung		Leukemia Mononuclear	
* Lymph Node, Bronchial		Leukemia Mononuclear	
* Lymph Node, Mediastinal		Leukemia Mononuclear	
Lymph Node, Mesenteric		Leukemia Mononuclear	
[ Leukemia Mononuclear TGLS = 10-7 ]			
Mesentery	Fat	Necrosis	Moderate
[ Necrosis TGLS = 4-7 ]			
* Nose	Olfactory Epi	Degeneration	Hyaline, Minimal
Pituitary Gland	Pars Distalis	Adenoma	
[ Adenoma TGLS = 3-7 ]			
Skin	SOA, Subcut Tiss	Inflammation	Chronic, Minimal
[ Inflammation TGLS = 8-6 ]			
Spleen		Accessory Spleen	
		Fibrosis	Moderate
		Leukemia Mononuclear	
[ Accessory Spleen TGLS = 7-8 ]			
[ Fibrosis TGLS = 6-9 ]			
[ Leukemia Mononuclear TGLS = 5-8 ]			

PRIMARY CAUSE OF DEATH - Spleen Leukemia Mononuclear

\* PROTOCOL REQUIRED TISSUE

**Experiment Number:** 88034-07

**Test Type:** CHRONIC

**Route:** SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY

**Species/Strain:** Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

**Test Compound:** Ozone/NNK

**CAS Number:** OZONNNKCOMB

**Date Report Requested:** 10/21/2014

**Time Report Requested:** 05:28:17

**First Dose M/F:** NA / NA

**Lab:** BNW

**ANIMAL ID:** 8015

**TRT#:** 1

**SEX:** Male

**DAY ON TEST:** 604

**DOSE:** TRIOCT./AIR

**DISP:** Moribund Sacrifice

**HISTO:** 26203

**ORGAN AND ACCOUNTABLE SITE STATUS**

**NORMAL**

* Larynx	* Lung	* Lymph Node, Bronchial	* Lymph Node, Mediastinal
* Trachea			

**OBSERVATIONS**

Brain  
Note: TGL #4 (brain, cerebrum, mass, 1 cm. dia., dark) is part of the pituitary adenoma (TGL #2) that remained adhered to the brain.

* Nose	Olfactory Epi	Degeneration	Hyaline, Minimal
Pituitary Gland	Pars Distalis	Carcinoma	
[ Carcinoma TGLS = 2,4-7+8 ]			
Skin	SOA, Subcut Tiss	Inflammation	Chronic, Minimal
[ Inflammation TGLS = 3-6 ]			

**PRIMARY CAUSE OF DEATH** - Pituitary Gland Pars Distalis Carcinoma

\* PROTOCOL REQUIRED TISSUE

**Experiment Number:** 88034-07

**Test Type:** CHRONIC

**Route:** SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY

**Species/Strain:** Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

**Test Compound:** Ozone/NNK

**CAS Number:** OZONNNKCOMB

**Date Report Requested:** 10/21/2014

**Time Report Requested:** 05:28:17

**First Dose M/F:** NA / NA

**Lab:** BNW

**ANIMAL ID:** 8016

**TRT#:** 1

**SEX:** Male

**DAY ON TEST:** 620

**DOSE:** TRIOCT./AIR

**DISP:** Moribund Sacrifice

**HISTO:** 26204

**ORGAN AND ACCOUNTABLE SITE STATUS**

**NORMAL**

* Larynx	* Lung	* Lymph Node, Bronchial	* Lymph Node, Mediastinal
* Trachea			

**OBSERVATIONS**

Kidney [ Nephropathy TGLS = 2-9 ]		Nephropathy	Moderate
* Nose	Olfactory Epi	Degeneration	Hyaline, Minimal
Peritoneum [ Inflammation TGLS = 4-7 ]		Inflammation	Chronic, Minimal
Pituitary Gland [ Adenoma TGLS = 1-8 ]	Pars Distalis	Adenoma	
Skin [ Inflammation TGLS = 5-6 ]	SOA, Subcut Tiss	Inflammation	Chronic, Minimal
Spleen [ Leukemia Mononuclear TGLS = 3-8 ]		Leukemia Mononuclear	

**PRIMARY CAUSE OF DEATH**

- Pituitary Gland Pars Distalis Adenoma

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 88034-07

Test Type: CHRONIC

Route: SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY

Species/Strain: Rat/F 344/N

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Test Compound: Ozone/NNK

CAS Number: OZONNNKCOMB

Date Report Requested: 10/21/2014

Time Report Requested: 05:28:17

First Dose M/F: NA / NA

Lab: BNW

ANIMAL ID: 8017

TRT#: 1

SEX: Male

DAY ON TEST: 736

DOSE: TRIOCT./AIR

DISP: Terminal Sacrifice

HISTO: 26205

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

\* Larynx

\* Lymph Node, Bronchial

\* Lymph Node, Mediastinal

\* Trachea

OBSERVATIONS

Kidney [ Nephropathy TGLS = 5-11 ]		Nephropathy	Moderate
Liver [ Vacuolization Cytoplasmic TGLS = 8-11 ]		Vacuolization Cytoplasmic	Focal, Mild
* Lung Mammary Gland [ Hyperplasia TGLS = 1-9 ]	Perivascular	Inflammation Hyperplasia	Chronic, Mild Moderate
* Nose Peritoneum [ Inflammation TGLS = 6-6 ]	Olfactory Epi Goblet Cell, Lateral Wall	Degeneration Hyperplasia Inflammation	Hyaline, Minimal Minimal Chronic, Minimal
Pituitary Gland [ Adenoma TGLS = 2-8 ]	Pars Distalis	Adenoma	
Skin [ Inflammation TGLS = 7-7 ]	SOA, Subcut Tiss	Inflammation	Chronic, Minimal
Spleen [ Congestion TGLS = 4-8 ]		Congestion	Minimal
Testes [ Adenoma TGLS = 3-10 ]	Interstit Cell	Adenoma	

PRIMARY CAUSE OF DEATH

-

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 88034-07

Test Type: CHRONIC

Route: SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY

Species/Strain: Rat/F 344/N

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Test Compound: Ozone/NNK

CAS Number: OZONNNKCOMB

Date Report Requested: 10/21/2014

Time Report Requested: 05:28:17

First Dose M/F: NA / NA

Lab: BNW

ANIMAL ID: 8018

TRT#: 1

SEX: Male

DAY ON TEST: 669

DOSE: TRIOCT./AIR

DISP: Moribund Sacrifice

HISTO: 26206

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

\* Larynx

\* Lymph Node, Bronchial

\* Trachea

OBSERVATIONS

Kidney

Nephropathy

Marked

[ Nephropathy TGLS = 6-10 ]

Liver

Hepatodiaphragmatic Nodule

[ Hepatodiaphragmatic Nodule TGLS = 5-9 ]

\* Lung

Fibrosis

Focal, Mild

Hemorrhage

Mild

Alveolus

Infiltration Cellular

Histiocyte, Moderate

Interstitialium

Inflammation

Chronic, Diffuse, Moderate

Note: TGL #10 & 11 are focal areas of fibrosis, hemorrhage, hemoglobin crystals, epithelial hyperplasia, and alveolar macrophage infiltration.

Note: Lung lesions in this rat are compatible with those that occur secondary to uremia.

[ Fibrosis TGLS = 10,11-12+11 ]

[ Hemorrhage TGLS = 2-3 ]

\* Lymph Node, Mediastinal

Inflammation

Chronic Active, Moderate

\* Nose

Olfactory Epi

Degeneration

Hyaline, Mild

Peritoneum

Inflammation

Chronic, Minimal

[ Inflammation TGLS = 7-6 ]

Pituitary Gland

Pars Distalis

Adenoma

[ Adenoma TGLS = 9-9 ]

Skin

SOA, Subcut Tiss

Inflammation

Chronic, Minimal

[ Inflammation TGLS = 8-7 ]

Testes

Interstit Cell

Adenoma

Interstit Cell

Hyperplasia

Mild

[ Adenoma TGLS = 3-9 ]

[ Hyperplasia TGLS = 4-9 ]

Thyroid Gland

Follicular Cel

Adenoma

[ Adenoma TGLS = 1-8 ]

PRIMARY CAUSE OF DEATH

- Kidney Nephropathy

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 88034-07

Test Type: CHRONIC

Route: SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY

Species/Strain: Rat/F 344/N

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Test Compound: Ozone/NNK

CAS Number: OZONNNKCOMB

Date Report Requested: 10/21/2014

Time Report Requested: 05:28:17

First Dose M/F: NA / NA

Lab: BNW

ANIMAL ID: 8019

TRT#: 1

SEX: Male

DAY ON TEST: 556

DOSE: TRIOCT./AIR

DISP: Moribund Sacrifice

HISTO: 26207

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

\* Larynx \* Trachea

OBSERVATIONS

* Lung		Hemorrhage	Minimal
		Leukemia Mononuclear	
* Lymph Node, Bronchial		Leukemia Mononuclear	
* Lymph Node, Mediastinal		Leukemia Mononuclear	
Lymph Node, Mesenteric		Leukemia Mononuclear	
[ Leukemia Mononuclear TGLS = 7-8 ]			
* Nose	Olfactory Epi	Degeneration	Hyaline, Mild
Pancreas		Leukemia Mononuclear	
[ Leukemia Mononuclear TGLS = 4-9 ]			
Peritoneum		Inflammation	Chronic, Minimal
[ Inflammation TGLS = 5-7 ]			
Pituitary Gland	Pars Distalis	Adenoma	
[ Adenoma TGLS = 2-10 ]			
Skin	SOA, Subcut Tiss	Inflammation	Chronic, Minimal
[ Inflammation TGLS = 6-6 ]			
Spleen		Leukemia Mononuclear	
[ Leukemia Mononuclear TGLS = 3-9 ]			

PRIMARY CAUSE OF DEATH - Spleen Leukemia Mononuclear

\* PROTOCOL REQUIRED TISSUE



Experiment Number: 88034-07

Test Type: CHRONIC

Route: SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY

Species/Strain: Rat/F 344/N

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Test Compound: Ozone/NNK

CAS Number: OZONNNKCOMB

Date Report Requested: 10/21/2014

Time Report Requested: 05:28:17

First Dose M/F: NA / NA

Lab: BNW

ANIMAL ID: 8021

TRT#: 1

SEX: Male

DAY ON TEST: 704

DOSE: TRIOCT./AIR

DISP: Moribund Sacrifice

HISTO: 26209

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

\* Larynx \* Trachea

OBSERVATIONS

Epididymis [ Granuloma Sperm TGLS = 3-10 ]	Granuloma Sperm	Moderate
Kidney [ Nephropathy TGLS = 5-8 ]	Nephropathy	Marked
Liver [ Leukemia Mononuclear TGLS = 9-7 ]	Degeneration Leukemia Mononuclear	Cystic, Mild
* Lung	Leukemia Mononuclear	
* Lymph Node, Bronchial	Leukemia Mononuclear	
* Lymph Node, Mediastinal	Leukemia Mononuclear	
* Nose Pituitary Gland [ Adenoma TGLS = 1-9 ]	Olfactory Epi Pars Distalis Adenoma	Hyaline, Minimal
Skin [ Inflammation TGLS = 6-6 ]	SOA, Subcut Tiss Inflammation	Chronic, Minimal
Spleen [ Leukemia Mononuclear TGLS = 4-7 ]	Leukemia Mononuclear	
Testes [ Adenoma TGLS = 2-7 ]	Interstit Cell Adenoma	

PRIMARY CAUSE OF DEATH - Kidney Nephropathy  
 CONTRIBUTORY CAUSE OF DEATH - Spleen Leukemia Mononuclear

\* PROTOCOL REQUIRED TISSUE



**Experiment Number:** 88034-07  
**Test Type:** CHRONIC  
**Route:** SUBCUTANEOUS|RESPIRATORY  
**EXPOSURE** WHOLE BODY  
**Species/Strain:** Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**  
**Test Compound:** Ozone/NNK  
**CAS Number:** OZONNNKCOMB

**Date Report Requested:** 10/21/2014  
**Time Report Requested:** 05:28:17  
**First Dose M/F:** NA / NA  
**Lab:** BNW

**ANIMAL ID:** 8022                      **TRT#:** 1                      **SEX:** Male                      **DAY ON TEST:** 655  
**DOSE:** TRIOCT./AIR                      **DISP:** Moribund Sacrifice                      **HISTO:** 26210

**ORGAN AND ACCOUNTABLE SITE STATUS**

**NORMAL**

\* Larynx                      \* Trachea

**MISSING**

\* Lymph Node, Mediastinal

**OBSERVATIONS**

Adrenal Medulla		Hemorrhage Pheochromocytoma Benign	Marked
[ Hemorrhage TGLS = 8-10 ]			
Kidney		Nephropathy	Marked
[ Nephropathy TGLS = 7-9 ]			
Liver		Degeneration Leukemia Mononuclear	Cystic, Mild
[ Degeneration TGLS = 6-10 ]			
* Lung	Interstitium	Fibrosis Inflammation Mineralization	Focal, Moderate Chronic, Diffuse, Mild Minimal
Note: TGL #5 is multifocal areas of fibrosis accompanied by alveolar epithelial hyperplasia, chronic inflamaion and hemorrhage.			
Note: Lung lesions are compatible with those that occur secondary to uremia.			
[ Fibrosis TGLS = 5-3 ]			
* Lymph Node, Bronchial		Hyperplasia	Lymphoid, Moderate
* Nose	Olfactory Epi	Degeneration Leukemia Mononuclear	Hyaline, Minimal
Peritoneum		Inflammation	Chronic, Minimal
[ Inflammation TGLS = 9-7 ]			
Pituitary Gland	Pars Distalis	Adenoma	
[ Adenoma TGLS = 2-9 ]			
Preputial Gland		Inflammation	Chronic Active, Moderate
[ Inflammation TGLS = 1-8 ]			
Skin	SOA, Subcut Tiss	Inflammation	Chronic, Minimal
[ Inflammation TGLS = 10-6 ]			

\* PROTOCOL REQUIRED TISSUE

**Experiment Number:** 88034-07

**Test Type:** CHRONIC

**Route:** SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY

**Species/Strain:** Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

**Test Compound:** Ozone/NNK

**CAS Number:** OZONNNKCOMB

**Date Report Requested:** 10/21/2014

**Time Report Requested:** 05:28:17

**First Dose M/F:** NA / NA

**Lab:** BNW

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**ANIMAL ID:** 8022

**TRT#:** 1

**SEX:** Male

**DAY ON TEST:** 655

**DOSE:** TRIOCT./AIR

**DISP:** Moribund Sacrifice

**HISTO:** 26210

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**ORGAN AND ACCOUNTABLE SITE STATUS**

Spleen

Fibrosis

Mild

Hematopoietic Cell Proliferation

Moderate

Leukemia Mononuclear

[ Fibrosis TGLS = 4-9 ]

[ Leukemia Mononuclear TGLS = 3-9 ]

---

**PRIMARY CAUSE OF DEATH**

- Kidney Nephropathy

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\* PROTOCOL REQUIRED TISSUE

**Experiment Number:** 88034-07

**Test Type:** CHRONIC

**Route:** SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY

**Species/Strain:** Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

**Test Compound:** Ozone/NNK

**CAS Number:** OZONNNKCOMB

**Date Report Requested:** 10/21/2014

**Time Report Requested:** 05:28:17

**First Dose M/F:** NA / NA

**Lab:** BNW

**ANIMAL ID:** 8023

**TRT#:** 1

**SEX:** Male

**DAY ON TEST:** 556

**DOSE:** TRIOCT./AIR

**DISP:** Moribund Sacrifice

**HISTO:** 26211

**ORGAN AND ACCOUNTABLE SITE STATUS**

**NORMAL**

Adrenal Cortex

\* Larynx

\* Lymph Node, Bronchial

\* Lymph Node, Mediastinal

\* Trachea

**OBSERVATIONS**

\* Lung

Hemorrhage

Minimal

[ Hemorrhage TGLS = 4-7 ]

\* Nose

Olfactory Epi

Degeneration

Hyaline, Minimal

Skin

SOA, Subcut Tiss

Inflammation

Chronic, Minimal

[ Inflammation TGLS = 3-6 ]

Spleen

Leukemia Mononuclear

[ Leukemia Mononuclear TGLS = 2,5-8+9 ]

**PRIMARY CAUSE OF DEATH**

- Spleen Leukemia Mononuclear

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 88034-07

Test Type: CHRONIC

Route: SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY

Species/Strain: Rat/F 344/N

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Test Compound: Ozone/NNK

CAS Number: OZONNNKCOMB

Date Report Requested: 10/21/2014

Time Report Requested: 05:28:17

First Dose M/F: NA / NA

Lab: BNW

ANIMAL ID: 8024

TRT#: 1

SEX: Male

DAY ON TEST: 484

DOSE: TRIOCT./AIR

DISP: Moribund Sacrifice

HISTO: 26212

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

* Larynx	* Lymph Node, Bronchial	* Lymph Node, Mediastinal	* Trachea
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OBSERVATIONS

Islets, Pancreatic [ Carcinoma TGLS = 2-8 ]		Carcinoma	
Kidney [ Nephropathy TGLS = 4-9 ]		Nephropathy	Moderate
Liver [ Leukemia Mononuclear TGLS = 3-7 ]		Leukemia Mononuclear	
* Lung		Leukemia Mononuclear	
* Nose	Olfactory Epi	Degeneration	Hyaline, Minimal
Peritoneum [ Inflammation TGLS = 5-7 ]		Inflammation	Chronic, Minimal
Pituitary Gland [ Adenoma TGLS = 1-8 ]	Pars Distalis	Adenoma	
Skin [ Inflammation TGLS = 6-6 ]	SOA, Subcut Tiss	Inflammation	Chronic, Minimal
Spleen [ Leukemia Mononuclear TGLS = 7-7 ]		Leukemia Mononuclear	

PRIMARY CAUSE OF DEATH - Spleen Leukemia Mononuclear

\* PROTOCOL REQUIRED TISSUE

**Experiment Number:** 88034-07

**Test Type:** CHRONIC

**Route:** SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY

**Species/Strain:** Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

**Test Compound:** Ozone/NNK

**CAS Number:** OZONNNKCOMB

**Date Report Requested:** 10/21/2014

**Time Report Requested:** 05:28:17

**First Dose M/F:** NA / NA

**Lab:** BNW

**ANIMAL ID:** 8025

**TRT#:** 1

**SEX:** Male

**DAY ON TEST:** 569

**DOSE:** TRIOCT./AIR

**DISP:** Natural Death

**HISTO:** 26213

**ORGAN AND ACCOUNTABLE SITE STATUS**

**NORMAL**

\* Trachea

**MISSING**

\* Lymph Node, Bronchial

\* Lymph Node, Mediastinal

**OBSERVATIONS**

Kidney		Nephropathy	Moderate
[ Nephropathy TGLS = 8-7 ]			
* Larynx		Foreign Body	
Liver		Leukemia Mononuclear	
[ Leukemia Mononuclear TGLS = 7-7 ]			
* Lung		Leukemia Mononuclear	
[ Leukemia Mononuclear TGLS = 2-3 ]			
* Nose	Olfactory Epi	Degeneration	Hyaline, Minimal
Peritoneum		Inflammation	Chronic, Minimal
[ Inflammation TGLS = 9-7 ]			
Pituitary Gland	Pars Distalis	Adenoma	
[ Adenoma TGLS = 3-7 ]			
Skin	SOA, Subcut Tiss	Inflammation	Chronic, Minimal
[ Inflammation TGLS = 4-9 ]		Inflammation	Chronic, Moderate
[ Inflammation TGLS = 11-6 ]			
Spleen		Fibrosis	Mild
[ Fibrosis TGLS = 6-9 ]		Leukemia Mononuclear	
[ Leukemia Mononuclear TGLS = 5,10-9+8 ]			

**PRIMARY CAUSE OF DEATH**

- Spleen Leukemia Mononuclear

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 88034-07

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Date Report Requested: 10/21/2014

Test Type: CHRONIC

Test Compound: Ozone/NNK

Time Report Requested: 05:28:17

Route: SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY

CAS Number: OZONNNKCOMB

First Dose M/F: NA / NA

Species/Strain: Rat/F 344/N

Lab: BNW

ANIMAL ID: 8026

TRT#: 1

SEX: Male

DAY ON TEST: 664

DOSE: TRIOCT./AIR

DISP: Moribund Sacrifice

HISTO: 26214

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

\* Larynx \* Trachea

OBSERVATIONS

Eye		Cataract	Mild
[ Cataract TGLS = 2-8 ]			
* Lung		Leukemia Mononuclear	
* Lymph Node, Bronchial		Leukemia Mononuclear	
* Lymph Node, Mediastinal		Leukemia Mononuclear	
* Nose	Olfactory Epi	Degeneration	Hyaline, Minimal
Peritoneum		Inflammation	Chronic, Minimal
[ Inflammation TGLS = 5-6 ]			
Pituitary Gland	Pars Distalis	Adenoma	
[ Adenoma TGLS = 3-9 ]			
Skin	SOA, Subcut Tiss	Inflammation	Chronic, Minimal
	SOA, Subcut Tiss	Sarcoma	
Note: The largest part of TGL 1 is on slide 10. Small foci of the sarcoma are also associated with chronic inflammatory lesions on slide 7.			
[ Inflammation TGLS = 6-7 ]			
[ Sarcoma TGLS = 1-10+7 ]			
Spleen		Leukemia Mononuclear	
[ Leukemia Mononuclear TGLS = 4-9 ]			

PRIMARY CAUSE OF DEATH - Spleen Leukemia Mononuclear

CONTRIBUTORY CAUSE OF DEATH - Skin SOA Subcut Tiss Sarcoma

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 88034-07

Test Type: CHRONIC

Route: SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY

Species/Strain: Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

Test Compound: Ozone/NNK

CAS Number: OZONNNKCOMB

Date Report Requested: 10/21/2014

Time Report Requested: 05:28:17

First Dose M/F: NA / NA

Lab: BNW

ANIMAL ID: 8027

TRT#: 1

SEX: Male

DAY ON TEST: 466

DOSE: TRIOCT./AIR

DISP: Moribund Sacrifice

HISTO: 26215

**ORGAN AND ACCOUNTABLE SITE STATUS**

**NORMAL**

Adrenal Cortex

\* Larynx

\* Lung

\* Lymph Node, Bronchial

\* Lymph Node, Mediastinal

\* Trachea

**OBSERVATIONS**

\* Nose

Olfactory Epi

Degeneration

Hyaline, Minimal

Olfactory Epi

Metaplasia

Mild

Peritoneum

Mesothelioma Malignant

[ Mesothelioma Malignant TGLS = 2-7 ]

Skin

SOA, Subcut Tiss

Inflammation

Chronic, Minimal

[ Inflammation TGLS = 4-6 ]

Testes

Mesothelioma Malignant

[ Mesothelioma Malignant TGLS = 3-7 ]

PRIMARY CAUSE OF DEATH

- Peritoneum Mesothelioma Malignant

\* PROTOCOL REQUIRED TISSUE

**Experiment Number:** 88034-07

**Test Type:** CHRONIC

**Route:** SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY

**Species/Strain:** Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

**Test Compound:** Ozone/NNK

**CAS Number:** OZONNNKCOMB

**Date Report Requested:** 10/21/2014

**Time Report Requested:** 05:28:17

**First Dose M/F:** NA / NA

**Lab:** BNW

**ANIMAL ID:** 8028

**TRT#:** 1

**SEX:** Male

**DAY ON TEST:** 672

**DOSE:** TRIOCT./AIR

**DISP:** Natural Death

**HISTO:** 26216

**ORGAN AND ACCOUNTABLE SITE STATUS**

**NORMAL**

\* Larynx

\* Trachea

**OBSERVATIONS**

Liver

[ Leukemia Mononuclear TGLS = 1-7 ]

Leukemia Mononuclear

\* Lung

Leukemia Mononuclear

\* Lymph Node, Bronchial

Leukemia Mononuclear

\* Lymph Node, Mediastinal

Leukemia Mononuclear

\* Nose

Olfactory Epi

Degeneration

Hyaline, Minimal

Peritoneum

Mesothelioma Malignant

Skin

SOA, Subcut Tiss

Inflammation

Chronic, Minimal

[ Inflammation TGLS = 3-6 ]

Spleen

Fibrosis

Mild

[ Fibrosis TGLS = 4-7 ]

Leukemia Mononuclear

Testes

Interstit Cell

Adenoma

Mesothelioma Malignant

[ Adenoma TGLS = 2-7 ]

**PRIMARY CAUSE OF DEATH**

- Spleen Leukemia Mononuclear

\* PROTOCOL REQUIRED TISSUE



**Experiment Number:** 88034-07

**Test Type:** CHRONIC

**Route:** SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY

**Species/Strain:** Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

**Test Compound:** Ozone/NNK

**CAS Number:** OZONNNKCOMB

**Date Report Requested:** 10/21/2014

**Time Report Requested:** 05:28:17

**First Dose M/F:** NA / NA

**Lab:** BNW

**ANIMAL ID:** 8029

**TRT#:** 1

**SEX:** Male

**DAY ON TEST:** 706

**DOSE:** TRIOCT./AIR

**DISP:** Moribund Sacrifice

**HISTO:** 26217

**ORGAN AND ACCOUNTABLE SITE STATUS**

**NORMAL**

\* Larynx

\* Lung

\* Lymph Node, Bronchial

\* Trachea

**INSUFFICIENT TISSUE**

\* Lymph Node, Mediastinal

**OBSERVATIONS**

Adrenal Medulla [ Pheochromocytoma Benign TGLS = 5-9 ]		Pheochromocytoma Benign	
Kidney [ Nephropathy TGLS = 4-9 ]		Nephropathy	Marked
* Nose	Olfactory Epi	Degeneration	Hyaline, Minimal
Peritoneum [ Inflammation TGLS = 6-6 ]		Inflammation	Chronic, Minimal
Pituitary Gland [ Adenoma TGLS = 1-8 ]	Pars Distalis	Adenoma	
Skin [ Inflammation TGLS = 7-7 ]	SOA, Subcut Tiss	Inflammation	Chronic, Minimal
Spleen [ Fibrosis TGLS = 3-8 ]		Fibrosis	Mild
Testes [ Adenoma TGLS = 2-8 ]	Interstit Cell	Adenoma	

**PRIMARY CAUSE OF DEATH**

- Pituitary Gland Pars Distalis Adenoma

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 88034-07

Test Type: CHRONIC

Route: SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY

Species/Strain: Rat/F 344/N

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Test Compound: Ozone/NNK

CAS Number: OZONNNKCOMB

Date Report Requested: 10/21/2014

Time Report Requested: 05:28:17

First Dose M/F: NA / NA

Lab: BNW

ANIMAL ID: 8030

TRT#: 1

SEX: Male

DAY ON TEST: 736

DOSE: TRIOCT./AIR

DISP: Terminal Sacrifice

HISTO: 26218

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

\* Larynx

\* Lymph Node, Bronchial

\* Lymph Node, Mediastinal

\* Trachea

OBSERVATIONS

Kidney

Cyst

Moderate

Nephropathy

Marked

[ Cyst TGLS = 6-12 ]

[ Nephropathy TGLS = 7-12 ]

Liver

Leukemia Mononuclear

[ Leukemia Mononuclear TGLS = 11-13 ]

\* Lung

Alveolar/Bronchiolar Adenoma

[ Alveolar/Bronchiolar Adenoma TGLS = 10-3 ]

Lymph Node

Renal

Infiltration Cellular

Plasma Cell, Mild

[ Infiltration Cellular TGLS = 8-7 ]

Mesentery

Fat

Necrosis

Moderate

[ Necrosis TGLS = 3-8 ]

\* Nose

Olfactory Epi

Degeneration

Hyaline, Minimal

Pituitary Gland

Pars Distalis

Hyperplasia

Mild

[ Hyperplasia TGLS = 1-11 ]

Preputial Gland

Adenoma

[ Adenoma TGLS = 2-9 ]

Skin

SOA, Subcut Tiss

Inflammation

Chronic, Minimal

[ Inflammation TGLS = 9-6 ]

Spleen

Leukemia Mononuclear

[ Leukemia Mononuclear TGLS = 5-11 ]

Testes

Interstit Cell

Adenoma

[ Adenoma TGLS = 4-10 ]

PRIMARY CAUSE OF DEATH

-

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 88034-07

Test Type: CHRONIC

Route: SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY

Species/Strain: Rat/F 344/N

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Test Compound: Ozone/NNK

CAS Number: OZONNNKCOMB

Date Report Requested: 10/21/2014

Time Report Requested: 05:28:17

First Dose M/F: NA / NA

Lab: BNW

ANIMAL ID: 8031

TRT#: 1

SEX: Male

DAY ON TEST: 681

DOSE: TRIOCT./AIR

DISP: Moribund Sacrifice

HISTO: 26219

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

* Larynx	* Lymph Node, Bronchial	* Lymph Node, Mediastinal	* Trachea
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OBSERVATIONS

Kidney [ Nephropathy TGLS = 10-10 ]		Nephropathy	Marked
Liver [ Leukemia Mononuclear TGLS = 8,9-9 ]		Leukemia Mononuclear	
* Lung [ Congestion TGLS = 2-3 ] [ Mineralization TGLS = 3-3 ]		Congestion Mineralization	Mild Moderate
Mesentery [ Necrosis TGLS = 7-8 ]	Fat	Necrosis	Mild
* Nose Peritoneum [ Inflammation TGLS = 11-6 ]	Olfactory Epi	Degeneration Inflammation	Hyaline, Minimal Chronic, Minimal
Skin [ Inflammation TGLS = 12-7 ] [ Sarcoma TGLS = 13-9 ] [ Squamous Cell Carcinoma TGLS = 1-8 ]	SOA, Subcut Tiss SOA, Subcut Tiss	Inflammation Sarcoma Squamous Cell Carcinoma	Chronic, Minimal
Spleen [ Leukemia Mononuclear TGLS = 4-8 ]		Leukemia Mononuclear	
Testes [ Adenoma TGLS = 5-9 ] [ Atrophy TGLS = 6-9 ]	Interstit Cell	Adenoma Atrophy	Moderate

PRIMARY CAUSE OF DEATH - Kidney Nephropathy

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 88034-07

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Date Report Requested: 10/21/2014

Test Type: CHRONIC

Test Compound: Ozone/NNK

Time Report Requested: 05:28:17

Route: SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY

CAS Number: OZONNNKCOMB

First Dose M/F: NA / NA

Species/Strain: Rat/F 344/N

Lab: BNW

ANIMAL ID: 8032

TRT#: 1

SEX: Male

DAY ON TEST: 663

DOSE: TRIOCT./AIR

DISP: Moribund Sacrifice

HISTO: 26220

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

* Larynx	* Lung	* Lymph Node, Bronchial	* Lymph Node, Mediastinal
* Trachea			

OBSERVATIONS

Kidney		Hydronephrosis Nephropathy Sarcoma	Moderate Moderate Metastatic (Tissue Nos)
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Note: Hydronephrosis in left kidney due to extensive invasion of the kidney by the sarcoma situated in retroperitoneal area.

[ Hydronephrosis TGLS = 8-9 ]

[ Nephropathy TGLS = 3-8 ]

* Nose	Olfactory Epi	Degeneration Inflammation	Hyaline, Minimal Chronic Active, Mild
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[ Inflammation TGLS = 1-7 ]

Skin	SOA, Subcut Tiss	Inflammation	Chronic, Minimal
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[ Inflammation TGLS = 4-6 ]

Testes		Atrophy	Moderate
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[ Atrophy TGLS = 2-8 ]

Tissue NOS		Sarcoma	
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Note: TGL 5 is a sarcoma that appears to have originated the the retroperitoneal tissue adjacent to the left kidney.

[ Sarcoma TGLS = 5-10 ]

PRIMARY CAUSE OF DEATH	- Tissue NOS Sarcoma
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\* PROTOCOL REQUIRED TISSUE

Experiment Number: 88034-07

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Date Report Requested: 10/21/2014

Test Type: CHRONIC

Test Compound: Ozone/NNK

Time Report Requested: 05:28:17

Route: SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY

CAS Number: OZONNNKCOMB

First Dose M/F: NA / NA

Species/Strain: Rat/F 344/N

Lab: BNW

ANIMAL ID: 8033

TRT#: 1

SEX: Male

DAY ON TEST: 736

DOSE: TRIOCT./AIR

DISP: Terminal Sacrifice

HISTO: 26221

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

* Larynx	* Lymph Node, Bronchial	Spleen	* Trachea
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INSUFFICIENT TISSUE

\* Lymph Node, Mediastinal

OBSERVATIONS

Kidney [ Nephropathy TGLS = 5-10 ]		Nephropathy	Mild
Liver [ Degeneration TGLS = 4-7 ]		Degeneration	Cystic, Mild
* Lung		Alveolar/Bronchiolar Adenoma	
* Nose	Olfactory Epi	Degeneration	Hyaline, Minimal
Pituitary Gland [ Adenoma TGLS = 1-7 ]	Pars Distalis	Adenoma	
Skin [ Inflammation TGLS = 6-6 ]	SOA, Subcut Tiss	Inflammation	Chronic, Minimal
Spleen	Note: No microscopic lesion corresponding to TGL 7 (Spleen enlarged) was found on microscopic examination.		
Testes [ Adenoma TGLS = 2,3-8 ]	Interstit Cell	Adenoma	

PRIMARY CAUSE OF DEATH

-

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 88034-07

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Date Report Requested: 10/21/2014

Test Type: CHRONIC

Test Compound: Ozone/NNK

Time Report Requested: 05:28:17

Route: SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY

CAS Number: OZONNNKCOMB

First Dose M/F: NA / NA

Species/Strain: Rat/F 344/N

Lab: BNW

ANIMAL ID: 8034

TRT#: 1

SEX: Male

DAY ON TEST: 709

DOSE: TRIOCT./AIR

DISP: Moribund Sacrifice

HISTO: 26222

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

\* Larynx

\* Lung

\* Trachea

MISSING

\* Lymph Node, Bronchial

OBSERVATIONS

Kidney		Nephropathy	Marked
[ Nephropathy TGLS = 6-9 ]			
Liver		Hepatodiaphragmatic Nodule	
[ Hepatodiaphragmatic Nodule TGLS = 5-9 ]			
* Lymph Node, Mediastinal		Infiltration Cellular	Plasma Cell, Mild
Mesentery	Fat	Necrosis	Moderate
[ Necrosis TGLS = 3-8 ]			
* Nose	Olfactory Epi	Degeneration	Hyaline, Minimal
Parathyroid Gland		Hyperplasia	Marked
[ Hyperplasia TGLS = 9-8 ]			
Peritoneum		Inflammation	Chronic, Minimal
[ Inflammation TGLS = 7-6 ]			
Pituitary Gland	Pars Distalis	Adenoma	
[ Adenoma TGLS = 1-8 ]			
Skin	SOA, Subcut Tiss	Inflammation	Chronic, Minimal
[ Inflammation TGLS = 8-7 ]			
Spleen		Fibrosis	Mild
[ Fibrosis TGLS = 4-8 ]			

PRIMARY CAUSE OF DEATH

- Pituitary Gland Pars Distalis Adenoma

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 88034-07

Test Type: CHRONIC

Route: SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY

Species/Strain: Rat/F 344/N

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Test Compound: Ozone/NNK

CAS Number: OZONNNKCOMB

Date Report Requested: 10/21/2014

Time Report Requested: 05:28:17

First Dose M/F: NA / NA

Lab: BNW

ANIMAL ID: 8035

TRT#: 1

SEX: Male

DAY ON TEST: 717

DOSE: TRIOCT./AIR

DISP: Moribund Sacrifice

HISTO: 26223

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

\* Larynx \* Trachea

OBSERVATIONS

Eye		Cataract	Marked
	Ciliary Body, Retina	Degeneration	Marked
[ Cataract TGLS = 1-7 ]			
Kidney		Nephropathy	Marked
[ Nephropathy TGLS = 8-8 ]			
Liver		Degeneration	Cystic, Mild
		Leukemia Mononuclear	
[ Leukemia Mononuclear TGLS = 6,7-10 ]			
* Lung		Leukemia Mononuclear	
* Lymph Node, Bronchial		Leukemia Mononuclear	
* Lymph Node, Mediastinal		Leukemia Mononuclear	
* Nose	Olfactory Epi	Degeneration	Hyaline, Minimal
Pituitary Gland	Pars Distalis	Adenoma	
[ Adenoma TGLS = 2-7 ]			
Skin	SOA, Subcut Tiss	Inflammation	Chronic, Minimal
		Keratoacanthoma	
[ Inflammation TGLS = 9-6 ]			
[ Keratoacanthoma TGLS = 10-7 ]			
Spleen		Fibroma	
		Leukemia Mononuclear	
[ Fibroma TGLS = 5-9 ]			
[ Leukemia Mononuclear TGLS = 3,4-9 ]			

PRIMARY CAUSE OF DEATH - Spleen Leukemia Mononuclear

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 88034-07

Test Type: CHRONIC

Route: SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY

Species/Strain: Rat/F 344/N

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Test Compound: Ozone/NNK

CAS Number: OZONNNKCOMB

Date Report Requested: 10/21/2014

Time Report Requested: 05:28:17

First Dose M/F: NA / NA

Lab: BNW

ANIMAL ID: 8036

TRT#: 1

SEX: Male

DAY ON TEST: 585

DOSE: TRIOCT./AIR

DISP: Moribund Sacrifice

HISTO: 26224

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

\* Larynx \* Trachea

OBSERVATIONS

Liver		Hepatodiaphragmatic Nodule Leukemia Mononuclear	
[ Hepatodiaphragmatic Nodule TGLS = 4-11 ]			
[ Leukemia Mononuclear TGLS = 5-8 ]			
* Lung		Leukemia Mononuclear	
Lymph Node	Pancreatic	Leukemia Mononuclear	
[ Leukemia Mononuclear TGLS = 7-7 ]			
* Lymph Node, Bronchial		Leukemia Mononuclear	
Lymph Node, Mandibular		Leukemia Mononuclear	
[ Leukemia Mononuclear TGLS = 2-8 ]			
* Lymph Node, Mediastinal		Leukemia Mononuclear	
* Nose	Olfactory Epi	Degeneration	Hyaline, Minimal
Pituitary Gland	Pars Distalis	Adenoma	
[ Adenoma TGLS = 3-8 ]			
Preputial Gland		Inflammation	Chronic Active, Moderate
[ Inflammation TGLS = 1-9+10 ]			
Skin	SOA, Subcut Tiss	Inflammation	Chronic, Minimal
[ Inflammation TGLS = 8-6 ]			
Spleen		Leukemia Mononuclear	
[ Leukemia Mononuclear TGLS = 6-7 ]			

PRIMARY CAUSE OF DEATH - Spleen Leukemia Mononuclear

\* PROTOCOL REQUIRED TISSUE



**Experiment Number:** 88034-07

**Test Type:** CHRONIC

**Route:** SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY

**Species/Strain:** Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

**Test Compound:** Ozone/NNK

**CAS Number:** OZONNNKCOMB

**Date Report Requested:** 10/21/2014

**Time Report Requested:** 05:28:17

**First Dose M/F:** NA / NA

**Lab:** BNW

**ANIMAL ID:** 8037

**TRT#:** 1

**SEX:** Male

**DAY ON TEST:** 641

**DOSE:** TRIOCT./AIR

**DISP:** Moribund Sacrifice

**HISTO:** 26225

**ORGAN AND ACCOUNTABLE SITE STATUS**

**NORMAL**

* Larynx	* Lung	* Lymph Node, Bronchial	* Lymph Node, Mediastinal
* Trachea			

**OBSERVATIONS**

Kidney [ Nephropathy TGLS = 2-8 ]		Nephropathy	Moderate
* Nose	Olfactory Epi	Degeneration	Hyaline, Minimal
Peritoneum [ Inflammation TGLS = 3-6 ]		Inflammation	Chronic, Minimal
Pituitary Gland [ Adenoma TGLS = 1-9 ]	Pars Distalis	Adenoma	
Skin [ Inflammation TGLS = 4-7 ]	SOA, Subcut Tiss	Inflammation	Chronic, Minimal

**PRIMARY CAUSE OF DEATH**

- Pituitary Gland Pars Distalis Adenoma

\* PROTOCOL REQUIRED TISSUE

**Experiment Number:** 88034-07

**Test Type:** CHRONIC

**Route:** SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY

**Species/Strain:** Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

**Test Compound:** Ozone/NNK

**CAS Number:** OZONNNKCOMB

**Date Report Requested:** 10/21/2014

**Time Report Requested:** 05:28:17

**First Dose M/F:** NA / NA

**Lab:** BNW

**ANIMAL ID:** 8038

**TRT#:** 1

**SEX:** Male

**DAY ON TEST:** 736

**DOSE:** TRIOCT./AIR

**DISP:** Terminal Sacrifice

**HISTO:** 26226

**ORGAN AND ACCOUNTABLE SITE STATUS**

**NORMAL**

\* Larynx

\* Lung

\* Lymph Node, Mediastinal

\* Trachea

**MISSING**

Pituitary Gland

**OBSERVATIONS**

Kidney

Nephropathy

Moderate

[ Nephropathy TGLS = 3-7 ]

\* Lymph Node, Bronchial

Leukemia Mononuclear

Mammary Gland

Fibroadenoma

[ Fibroadenoma TGLS = 1-8 ]

\* Nose

Olfactory Epi

Degeneration

Hyaline, Mild

Pituitary Gl

Note: Pituitary was not on slide #6. Check of block and wet tissue revealed no pituitary. This tissue was probably lost during processing. TGL #4 not addressed.

Spleen

Leukemia Mononuclear

[ Leukemia Mononuclear TGLS = 5-6 ]

Testes

Interstit Cell

Adenoma

[ Adenoma TGLS = 2-6 ]

**PRIMARY CAUSE OF DEATH**

-

\* PROTOCOL REQUIRED TISSUE

**Experiment Number:** 88034-07

**Test Type:** CHRONIC

**Route:** SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY

**Species/Strain:** Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

**Test Compound:** Ozone/NNK

**CAS Number:** OZONNNKCOMB

**Date Report Requested:** 10/21/2014

**Time Report Requested:** 05:28:17

**First Dose M/F:** NA / NA

**Lab:** BNW

**ANIMAL ID:** 8039

**TRT#:** 1

**SEX:** Male

**DAY ON TEST:** 515

**DOSE:** TRIOCT./AIR

**DISP:** Moribund Sacrifice

**HISTO:** 26227

**ORGAN AND ACCOUNTABLE SITE STATUS**

**NORMAL**

* Larynx	* Lung	* Lymph Node, Bronchial	* Lymph Node, Mediastinal
* Trachea			

**OBSERVATIONS**

* Nose	Olfactory Epi	Degeneration	Hyaline, Minimal
Peritoneum		Inflammation	Chronic, Minimal
[ Inflammation TGLS = 4-7 ]			
Pituitary Gland	Pars Distalis	Adenoma	
[ Adenoma TGLS = 1-9 ]			
Skin	Subcut Tiss	Inflammation	Chronic, Minimal
[ Inflammation TGLS = 5-6 ]			
Spleen		Leukemia Mononuclear	
[ Leukemia Mononuclear TGLS = 2,3-8 ]			

**PRIMARY CAUSE OF DEATH** - Spleen Leukemia Mononuclear

Animal Note: Since TGL #6 is a gross color change only no section was taken to correlate with this observation.

\* PROTOCOL REQUIRED TISSUE

**Experiment Number:** 88034-07

**Test Type:** CHRONIC

**Route:** SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY

**Species/Strain:** Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

**Test Compound:** Ozone/NNK

**CAS Number:** OZONNNKCOMB

**Date Report Requested:** 10/21/2014

**Time Report Requested:** 05:28:17

**First Dose M/F:** NA / NA

**Lab:** BNW

**ANIMAL ID:** 8040

**TRT#:** 1

**SEX:** Male

**DAY ON TEST:** 611

**DOSE:** TRIOCT./AIR

**DISP:** Moribund Sacrifice

**HISTO:** 26228

**ORGAN AND ACCOUNTABLE SITE STATUS**

**NORMAL**

\* Larynx

\* Trachea

**MISSING**

\* Lymph Node, Bronchial

**OBSERVATIONS**

Adrenal Medulla [ Pheochromocytoma Benign TGLS = 3-9 ]		Pheochromocytoma Benign	
Liver [ Leukemia Mononuclear TGLS = 2-10 ]		Leukemia Mononuclear	
* Lung		Leukemia Mononuclear	
Lymph Node [ Leukemia Mononuclear TGLS = 7-8 ]	Iliac	Leukemia Mononuclear	
* Lymph Node, Mediastinal [ Leukemia Mononuclear TGLS = 6-2 ]		Leukemia Mononuclear	
* Nose	Olfactory Epi	Degeneration	Hyaline, Mild
Peritoneum [ Inflammation TGLS = 5-6 ]		Inflammation	Chronic, Minimal
Pituitary Gland [ Adenoma TGLS = 1-10 ]	Pars Distalis	Adenoma	
Skin [ Inflammation TGLS = 8-7 ]	SOA, Subcut Tiss	Inflammation	Chronic, Minimal
Spleen [ Leukemia Mononuclear TGLS = 4-9 ]		Leukemia Mononuclear	

**PRIMARY CAUSE OF DEATH**

- Spleen Leukemia Mononuclear

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 88034-07

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Date Report Requested: 10/21/2014

Test Type: CHRONIC

Test Compound: Ozone/NNK

Time Report Requested: 05:28:17

Route: SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY

CAS Number: OZONNNKCOMB

First Dose M/F: NA / NA

Species/Strain: Rat/F 344/N

Lab: BNW

ANIMAL ID: 8041

TRT#: 1

SEX: Male

DAY ON TEST: 327

DOSE: TRIOCT./AIR

DISP: Moribund Sacrifice

HISTO: 26229

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

\* Lymph Node, Mediastinal

\* Trachea

OBSERVATIONS

\* Larynx

Foreign Body

Liver

Leukemia Mononuclear

[ Leukemia Mononuclear TGLS = 4-10 ]

\* Lung

Leukemia Mononuclear

Leukemia Mononuclear

[ Leukemia Mononuclear TGLS = 1-7 ]

\* Lymph Node, Bronchial

Leukemia Mononuclear

\* Nose

Olfactory Epi

Degeneration

Hyaline, Minimal

Peritoneum

Inflammation

Chronic, Minimal

Note: TGL 5 is in retroperitoneal fat, not kidney. It is chronic inflammation surrounding a cystic space typical of the response to injected vehicle (trioctinoin).

[ Inflammation TGLS = 5-9 ]

Preputial Gland

Inflammation

Chronic Active, Moderate

[ Inflammation TGLS = 2-11 ]

Skin

SOA, Subcut Tiss

Inflammation

Chronic, Minimal

[ Inflammation TGLS = 7-6 ]

Spleen

Leukemia Mononuclear

[ Leukemia Mononuclear TGLS = 3-8 ]

PRIMARY CAUSE OF DEATH

- Spleen Leukemia Mononuclear

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 88034-07

Test Type: CHRONIC

Route: SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY

Species/Strain: Rat/F 344/N

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Test Compound: Ozone/NNK

CAS Number: OZONNNKCOMB

Date Report Requested: 10/21/2014

Time Report Requested: 05:28:17

First Dose M/F: NA / NA

Lab: BNW

ANIMAL ID: 8042

TRT#: 1

SEX: Male

DAY ON TEST: 724

DOSE: TRIOCT./AIR

DISP: Moribund Sacrifice

HISTO: 26230

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

\* Trachea

MISSING

\* Lymph Node, Mediastinal

OBSERVATIONS

Blood Vessel [ Mineralization TGLS = 9-8 ]	Aorta	Mineralization	Moderate
Kidney [ Nephropathy TGLS = 5-10 ]		Nephropathy	Marked
* Larynx		Foreign Body	
Liver [ Degeneration TGLS = 4-9 ]		Degeneration	Cystic, Mild
* Lung	Interstitium	Inflammation	Chronic, Diffuse, Mild
* Lymph Node, Bronchial		Mineralization	Minimal
* Nose	Olfactory Epi	Hyperplasia	Lymphoid, Mild
	Lateral Wall	Degeneration	Hyaline, Minimal
Peritoneum [ Inflammation TGLS = 6,7-7 ]		Hyperplasia	Minimal
Skin [ Inflammation TGLS = 8-6 ]		Inflammation	Chronic, Minimal
Testes [ Adenoma TGLS = 2-8 ] [ Atrophy TGLS = 3-8 ]	Interstit Cell	Adenoma	
		Atrophy	Moderate
Thyroid Gland [ Carcinoma TGLS = 1-8 ]	C Cell	Carcinoma	

PRIMARY CAUSE OF DEATH

- Kidney Nephropathy

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 88034-07

Test Type: CHRONIC

Route: SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY

Species/Strain: Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

Test Compound: Ozone/NNK

CAS Number: OZONNNKCOMB

Date Report Requested: 10/21/2014

Time Report Requested: 05:28:17

First Dose M/F: NA / NA

Lab: BNW

ANIMAL ID: 8043

TRT#: 1

SEX: Male

DAY ON TEST: 736

DOSE: TRIOCT./AIR

DISP: Terminal Sacrifice

HISTO: 26231

**ORGAN AND ACCOUNTABLE SITE STATUS**

**NORMAL**

\* Larynx

\* Lymph Node, Mediastinal

\* Trachea

**MISSING**

\* Lymph Node, Bronchial

**OBSERVATIONS**

Kidney [ Nephropathy TGLS = 4-10 ]		Nephropathy	Moderate
* Lung [ Alveolar/Bronchiolar Adenoma TGLS = 1-8 ] [ Alveolar/Bronchiolar Carcinoma TGLS = 1-8 ]		Alveolar/Bronchiolar Adenoma Alveolar/Bronchiolar Carcinoma	
* Nose Peritoneum [ Inflammation TGLS = 5-6 ]	Olfactory Epi	Degeneration Inflammation	Hyaline, Mild Chronic, Minimal
Pituitary Gland [ Adenoma TGLS = 2-9 ]	Pars Distalis	Adenoma	
Skin [ Inflammation TGLS = 6-7 ]	SOA, Subcut Tiss	Inflammation	Chronic, Minimal
Spleen [ Leukemia Mononuclear TGLS = 3-9 ]		Leukemia Mononuclear	

PRIMARY CAUSE OF DEATH

-

\* PROTOCOL REQUIRED TISSUE

**Experiment Number:** 88034-07

**Test Type:** CHRONIC

**Route:** SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY

**Species/Strain:** Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

**Test Compound:** Ozone/NNK

**CAS Number:** OZONNNKCOMB

**Date Report Requested:** 10/21/2014

**Time Report Requested:** 05:28:17

**First Dose M/F:** NA / NA

**Lab:** BNW

**ANIMAL ID:** 8044

**TRT#:** 1

**SEX:** Male

**DAY ON TEST:** 692

**DOSE:** TRIOCT./AIR

**DISP:** Moribund Sacrifice

**HISTO:** 26232

**ORGAN AND ACCOUNTABLE SITE STATUS**

**NORMAL**

\* Larynx

\* Lung

\* Lymph Node, Bronchial

\* Trachea

**OBSERVATIONS**

Kidney

Nephropathy

Moderate

[ Nephropathy TGLS = 3-9 ]

Lymph Node

Renal

Hemorrhage

Mild

Renal

Inflammation

Granulomatous, Mild

[ Inflammation TGLS = 4-8 ]

\* Lymph Node, Mediastinal

Hemorrhage

Mild

Mammary Gland

Galactocele

Moderate

[ Galactocele TGLS = 5-7 ]

\* Nose

Olfactory Epi

Degeneration

Hyaline, Minimal

Pituitary Gland

Pars Distalis

Adenoma

[ Adenoma TGLS = 1-10 ]

Skin

SOA, Subcut Tiss

Inflammation

Chronic, Minimal

SOA, Subcut Tiss

Sarcoma

Note: A small sarcoma is present in section #6 along with the subcutaneous inflammatory nodules.

[ Inflammation TGLS = 6-6 ]

Spleen

Fibrosis

Mild

[ Fibrosis TGLS = 2-10 ]

**PRIMARY CAUSE OF DEATH**

- Pituitary Gland Pars Distalis Adenoma

\* PROTOCOL REQUIRED TISSUE



**Experiment Number:** 88034-07

**Test Type:** CHRONIC

**Route:** SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY

**Species/Strain:** Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

**Test Compound:** Ozone/NNK

**CAS Number:** OZONNNKCOMB

**Date Report Requested:** 10/21/2014

**Time Report Requested:** 05:28:17

**First Dose M/F:** NA / NA

**Lab:** BNW

**ANIMAL ID:** 8045

**TRT#:** 1

**SEX:** Male

**DAY ON TEST:** 576

**DOSE:** TRIOCT./AIR

**DISP:** Moribund Sacrifice

**HISTO:** 26233

**ORGAN AND ACCOUNTABLE SITE STATUS**

**NORMAL**

\* Larynx

\* Lung

\* Lymph Node, Mediastinal

\* Trachea

**MISSING**

\* Lymph Node, Bronchial

**OBSERVATIONS**

\* Nose

Olfactory Epi

Degeneration

Hyaline, Mild

Peritoneum

Inflammation

Chronic, Minimal

[ Inflammation TGLS = 3-7 ]

Pituitary Gland

Pars Distalis

Adenoma

[ Adenoma TGLS = 1-7 ]

Preputial Gland

Inflammation

Chronic Active, Mild

[ Inflammation TGLS = 2-7 ]

Skin

SOA, Subcut Tiss

Inflammation

Chronic, Minimal

[ Inflammation TGLS = 4-6 ]

**PRIMARY CAUSE OF DEATH**

- Pituitary Gland Pars Distalis Adenoma

\* PROTOCOL REQUIRED TISSUE

**Experiment Number:** 88034-07

**Test Type:** CHRONIC

**Route:** SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY

**Species/Strain:** Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

**Test Compound:** Ozone/NNK

**CAS Number:** OZONNNKCOMB

**Date Report Requested:** 10/21/2014

**Time Report Requested:** 05:28:17

**First Dose M/F:** NA / NA

**Lab:** BNW

**ANIMAL ID:** 8046

**TRT#:** 1

**SEX:** Male

**DAY ON TEST:** 620

**DOSE:** TRIOCT./AIR

**DISP:** Moribund Sacrifice

**HISTO:** 26234

**ORGAN AND ACCOUNTABLE SITE STATUS**

**NORMAL**

* Larynx	* Lung	* Lymph Node, Bronchial	* Lymph Node, Mediastinal
* Trachea			

**OBSERVATIONS**

Mesentery [ Necrosis TGLS = 2-7 ]	Fat	Necrosis	Moderate
* Nose	Olfactory Epi	Degeneration	Hyaline, Mild
Pituitary Gland [ Adenoma TGLS = 1-7 ]	Pars Distalis	Adenoma	
Skin [ Inflammation TGLS = 3-6 ]	SOA, Subcut Tiss	Inflammation	Chronic, Minimal

**PRIMARY CAUSE OF DEATH**

- Pituitary Gland Pars Distalis Adenoma

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 88034-07

Test Type: CHRONIC

Route: SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY

Species/Strain: Rat/F 344/N

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Test Compound: Ozone/NNK

CAS Number: OZONNNKCOMB

Date Report Requested: 10/21/2014

Time Report Requested: 05:28:17

First Dose M/F: NA / NA

Lab: BNW

ANIMAL ID: 8047

TRT#: 1

SEX: Male

DAY ON TEST: 673

DOSE: TRIOCT./AIR

DISP: Moribund Sacrifice

HISTO: 26235

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

Adrenal Cortex

\* Larynx

\* Lymph Node, Bronchial

\* Trachea

MISSING

\* Lymph Node, Mediastinal

\* Nose

OBSERVATIONS

Kidney [ Nephropathy TGLS = 5-11 ]		Nephropathy	Moderate
Liver [ Vacuolization Cytoplasmic TGLS = 6-12 ]		Vacuolization Cytoplasmic	Mild
* Lung [ Congestion TGLS = 1-3 ]		Congestion	Mild
Lymph Node [ Infiltration Cellular TGLS = 7-8 ] [ Infiltration Cellular TGLS = 9-9 ]	Renal	Infiltration Cellular Infiltration Cellular	Plasma Cell, Moderate Plasma Cell, Moderate
Peritoneum [ Inflammation TGLS = 8-6 ]		Inflammation	Chronic, Minimal
Pituitary Gland [ Adenoma TGLS = 2-10 ]	Pars Distalis	Adenoma	
Skin [ Inflammation TGLS = 10-7 ]	SOA, Subcut Tiss	Inflammation	Chronic, Minimal
Spleen [ Fibrosis TGLS = 4-10 ]		Congestion Fibrosis	Mild Mild
Testes [ Adenoma TGLS = 3-10 ]	Interstit Cell	Adenoma	

PRIMARY CAUSE OF DEATH - Pituitary Gland Pars Distalis Adenoma

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 88034-07

Test Type: CHRONIC

Route: SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY

Species/Strain: Rat/F 344/N

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Test Compound: Ozone/NNK

CAS Number: OZONNNKCOMB

Date Report Requested: 10/21/2014

Time Report Requested: 05:28:17

First Dose M/F: NA / NA

Lab: BNW

ANIMAL ID: 8048

TRT#: 1

SEX: Male

DAY ON TEST: 613

DOSE: TRIOCT./AIR

DISP: Moribund Sacrifice

HISTO: 26236

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

\* Larynx \* Trachea

OBSERVATIONS

Kidney		Leukemia Mononuclear Nephropathy	Moderate
[ Nephropathy TGLS = 4-9 ]			
Liver		Leukemia Mononuclear	
[ Leukemia Mononuclear TGLS = 3-8 ]			
* Lung		Leukemia Mononuclear	
[ Leukemia Mononuclear TGLS = 1-3 ]			
* Lymph Node, Bronchial		Leukemia Mononuclear	
* Lymph Node, Mediastinal		Leukemia Mononuclear	
* Nose	Olfactory Epi	Degeneration Leukemia Mononuclear	Hyaline, Minimal
Peritoneum		Inflammation	Chronic, Minimal
[ Inflammation TGLS = 9-6 ]			
Pituitary Gland	Pars Distalis	Adenoma	
[ Adenoma TGLS = 2-8 ]			
Skin	SOA, Subcut Tiss	Inflammation	Chronic, Minimal
[ Inflammation TGLS = 10-7 ]			
Spleen		Fibrosis Leukemia Mononuclear	Mild
[ Fibrosis TGLS = 7-10 ]			
[ Leukemia Mononuclear TGLS = 5,6-10+9 ]			
Testes	Interstit Cell	Atrophy Hyperplasia	Moderate Mild
[ Atrophy TGLS = 8-10 ]			

PRIMARY CAUSE OF DEATH - Spleen Leukemia Mononuclear

\* PROTOCOL REQUIRED TISSUE

**Experiment Number:** 88034-07

**Test Type:** CHRONIC

**Route:** SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY

**Species/Strain:** Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

**Test Compound:** Ozone/NNK

**CAS Number:** OZONNNKCOMB

**Date Report Requested:** 10/21/2014

**Time Report Requested:** 05:28:17

**First Dose M/F:** NA / NA

**Lab:** BNW

**ANIMAL ID:** 8201

**TRT#:** 2

**SEX:** Male

**DAY ON TEST:** 417

**DOSE:** .1MG/KG NNK/AIR

**DISP:** Moribund Sacrifice

**HISTO:** 26237

**ORGAN AND ACCOUNTABLE SITE STATUS**

**NORMAL**

\* Larynx  
Urinary Bladder

\* Lung

\* Lymph Node, Bronchial

\* Trachea

**MISSING**

\* Lymph Node, Mediastinal

**OBSERVATIONS**

\* Nose  
Peritoneum  
[ Inflammation TGLS = 2-8 ]

Olfactory Epi

Degeneration  
Inflammation

Hyaline, Minimal  
Chronic, Minimal

Skin  
[ Fibroma TGLS = 1-7 ]  
[ Inflammation TGLS = 4-6 ]

Subcut Tiss  
SOA, Subcut Tiss

Fibroma  
Inflammation

Chronic, Minimal

Urin Bladder

Note: TGL 3 (urinary bladder wall thick) was probably due to injection of the bladder wall with formalin. Therefore, NCL was entered on IANR form.

**PRIMARY CAUSE OF DEATH**

- UNCERTAIN

\* PROTOCOL REQUIRED TISSUE

**Experiment Number:** 88034-07

**Test Type:** CHRONIC

**Route:** SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY

**Species/Strain:** Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

**Test Compound:** Ozone/NNK

**CAS Number:** OZONNNKCOMB

**Date Report Requested:** 10/21/2014

**Time Report Requested:** 05:28:17

**First Dose M/F:** NA / NA

**Lab:** BNW

**ANIMAL ID:** 8202

**TRT#:** 2

**SEX:** Male

**DAY ON TEST:** 478

**DOSE:** .1MG/KG NNK/AIR

**DISP:** Moribund Sacrifice

**HISTO:** 26238

**ORGAN AND ACCOUNTABLE SITE STATUS**

**NORMAL**

\* Larynx

\* Lung

\* Lymph Node, Mediastinal

\* Trachea

**MISSING**

\* Lymph Node, Bronchial

**OBSERVATIONS**

\* Nose

Olfactory Epi

Degeneration

Hyaline, Minimal

Pituitary Gland

Pars Distalis

Adenoma

[ Adenoma TGLS = 1-7 ]

Prostate

Inflammation

Suppurative, Moderate

[ Inflammation TGLS = 2-7 ]

Skin

SOA, Subcut Tiss

Inflammation

Chronic, Minimal

[ Inflammation TGLS = 3-6 ]

**PRIMARY CAUSE OF DEATH**

- Pituitary Gland Pars Distalis Adenoma

\* PROTOCOL REQUIRED TISSUE

**Experiment Number:** 88034-07  
**Test Type:** CHRONIC  
**Route:** SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY  
**Species/Strain:** Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**  
**Test Compound:** Ozone/NNK  
**CAS Number:** OZONNNKCOMB

**Date Report Requested:** 10/21/2014  
**Time Report Requested:** 05:28:17  
**First Dose M/F:** NA / NA  
**Lab:** BNW

**ANIMAL ID:** 8203                   **TRT#:** 2                   **SEX:** Male                   **DAY ON TEST:** 612  
**DOSE:** .1MG/KG NNK/AIR       **DISP:** Moribund Sacrifice   **HISTO:** 26239

**ORGAN AND ACCOUNTABLE SITE STATUS**

**NORMAL**  
\* Larynx                               \* Trachea

**MISSING**  
\* Lymph Node, Bronchial

**OBSERVATIONS**

Liver [ Leukemia Mononuclear TGLS = 5-7 ]		Leukemia Mononuclear	
* Lung		Leukemia Mononuclear	
* Lymph Node, Mediastinal [ Leukemia Mononuclear TGLS = 1-2 ]		Leukemia Mononuclear	
Mesentery [ Necrosis TGLS = 3-8 ]	Fat	Necrosis	Moderate
* Nose	Olfactory Epi	Degeneration	
Spleen [ Leukemia Mononuclear TGLS = 4-6 ]		Leukemia Mononuclear	Hyaline, Minimal
Testes [ Adenoma TGLS = 2-6 ]	Interstit Cell	Adenoma	

PRIMARY CAUSE OF DEATH       - Spleen   Leukemia Mononuclear

\* PROTOCOL REQUIRED TISSUE

**Experiment Number:** 88034-07

**Test Type:** CHRONIC

**Route:** SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY

**Species/Strain:** Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

**Test Compound:** Ozone/NNK

**CAS Number:** OZONNNKCOMB

**Date Report Requested:** 10/21/2014

**Time Report Requested:** 05:28:17

**First Dose M/F:** NA / NA

**Lab:** BNW

**ANIMAL ID:** 8204

**TRT#:** 2

**SEX:** Male

**DAY ON TEST:** 736

**DOSE:** .1MG/KG NNK/AIR

**DISP:** Terminal Sacrifice

**HISTO:** 26240

**ORGAN AND ACCOUNTABLE SITE STATUS**

**NORMAL**

\* Larynx

\* Lung

\* Lymph Node, Mediastinal

\* Trachea

**MISSING**

\* Lymph Node, Bronchial

**OBSERVATIONS**

Kidney [ Nephropathy TGLS = 4-9 ]		Nephropathy	Marked
Mammary Gland [ Galactoceles TGLS = 1-7 ]		Galactoceles	Moderate
* Nose	Olfactory Epi	Degeneration Inflammation	Hyaline, Minimal Chronic, Minimal
Oral Mucosa [ Hyperplasia TGLS = 6-5 ]	Olfactory Epi Pharyngeal	Metaplasia Hyperplasia	Minimal Squamous, Moderate
Pituitary Gland [ Adenoma TGLS = 2-8 ]	Pars Distalis	Adenoma	
Skin [ Inflammation TGLS = 5-6 ]	SOA, Subcut Tiss	Inflammation	Chronic, Minimal
Spleen [ Fibrosis TGLS = 3-8 ]		Fibrosis	Mild

**PRIMARY CAUSE OF DEATH**

-

\* PROTOCOL REQUIRED TISSUE



**Experiment Number:** 88034-07

**Test Type:** CHRONIC

**Route:** SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY

**Species/Strain:** Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

**Test Compound:** Ozone/NNK

**CAS Number:** OZONNNKCOMB

**Date Report Requested:** 10/21/2014

**Time Report Requested:** 05:28:17

**First Dose M/F:** NA / NA

**Lab:** BNW

**ANIMAL ID:** 8205

**TRT#:** 2

**SEX:** Male

**DAY ON TEST:** 582

**DOSE:** .1MG/KG NNK/AIR

**DISP:** Moribund Sacrifice

**HISTO:** 26241

**ORGAN AND ACCOUNTABLE SITE STATUS**

**NORMAL**

\* Larynx

\* Lymph Node, Mediastinal

\* Trachea

**OBSERVATIONS**

Kidney [ Nephropathy TGLS = 5-7 ]		Nephropathy	Moderate
Liver [ Leukemia Mononuclear TGLS = 4-9 ]		Leukemia Mononuclear	
* Lung [ Leukemia Mononuclear TGLS = 3-3 ]		Leukemia Mononuclear	
* Lymph Node, Bronchial		Leukemia Mononuclear	
* Nose Pituitary Gland [ Adenoma TGLS = 2-8 ]	Olfactory Epi Pars Distalis	Degeneration Adenoma	Hyaline, Minimal
Skin [ Inflammation TGLS = 7-6 ]	SOA, Subcut Tiss	Inflammation	Chronic, Minimal
Spleen [ Leukemia Mononuclear TGLS = 6-8 ]		Leukemia Mononuclear	

**PRIMARY CAUSE OF DEATH**

- Pituitary Gland Pars Distalis Adenoma

\* PROTOCOL REQUIRED TISSUE

**Experiment Number:** 88034-07

**Test Type:** CHRONIC

**Route:** SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY

**Species/Strain:** Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

**Test Compound:** Ozone/NNK

**CAS Number:** OZONNNKCOMB

**Date Report Requested:** 10/21/2014

**Time Report Requested:** 05:28:17

**First Dose M/F:** NA / NA

**Lab:** BNW

**ANIMAL ID:** 8206

**TRT#:** 2

**SEX:** Male

**DAY ON TEST:** 466

**DOSE:** .1MG/KG NNK/AIR

**DISP:** Moribund Sacrifice

**HISTO:** 26242

**ORGAN AND ACCOUNTABLE SITE STATUS**

**NORMAL**

\* Lung

\* Trachea

**MISSING**

\* Lymph Node, Bronchial

\* Lymph Node, Mediastinal

**OBSERVATIONS**

* Larynx		Inflammation	Suppurative, Minimal
Lymph Node	Renal	Inflammation	Granulomatous, Mild
[ Inflammation TGLS = 4-7 ]			
Lymph Node, Mesenteric		Inflammation	Granulomatous, Mild
[ Inflammation TGLS = 6-8 ]			
* Nose	Olfactory Epi	Degeneration	Hyaline, Minimal
Peritoneum		Inflammation	Chronic, Minimal
[ Inflammation TGLS = 3-7 ]			
Preputial Gland		Carcinoma	
[ Carcinoma TGLS = 1-8+9+10+11 ]			
Skin	SOA, Subcut Tiss	Inflammation	Chronic, Minimal
		Ulcer	Moderate
[ Inflammation TGLS = 5-6 ]			
[ Ulcer TGLS = 2-12 ]			

**PRIMARY CAUSE OF DEATH**

- Preputial Gland Carcinoma

\* PROTOCOL REQUIRED TISSUE

**Experiment Number:** 88034-07

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

**Date Report Requested:** 10/21/2014

**Test Type:** CHRONIC

**Test Compound:** Ozone/NNK

**Time Report Requested:** 05:28:17

**Route:** SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY

**CAS Number:** OZONNNKCOMB

**First Dose M/F:** NA / NA

**Species/Strain:** Rat/F 344/N

**Lab:** BNW

**ANIMAL ID:** 8207

**TRT#:** 2

**SEX:** Male

**DAY ON TEST:** 544

**DOSE:** .1MG/KG NNK/AIR

**DISP:** Moribund Sacrifice

**HISTO:** 26243

**ORGAN AND ACCOUNTABLE SITE STATUS**

**NORMAL**

\* Larynx

\* Trachea

**MISSING**

\* Lymph Node, Bronchial

**OBSERVATIONS**

Liver		Leukemia Mononuclear	
[ Leukemia Mononuclear TGLS = 6-8 ]			
* Lung		Leukemia Mononuclear	
[ Leukemia Mononuclear TGLS = 3-3 ]			
* Lymph Node, Mediastinal		Leukemia Mononuclear	
[ Leukemia Mononuclear TGLS = 4-2 ]			
* Nose	Olfactory Epi	Degeneration	Hyaline, Minimal
Pituitary Gland	Pars Distalis	Adenoma	
[ Adenoma TGLS = 5-9 ]			
Skin	SOA, Subcut Tiss	Inflammation	Chronic, Minimal
		Squamous Cell Papilloma	
		Ulcer	Moderate
[ Inflammation TGLS = 8-6 ]			
[ Squamous Cell Papilloma TGLS = 1-9 ]			
[ Ulcer TGLS = 2-7 ]			
Spleen		Leukemia Mononuclear	
[ Leukemia Mononuclear TGLS = 7-8 ]			

**PRIMARY CAUSE OF DEATH** - Spleen Leukemia Mononuclear

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 88034-07

Test Type: CHRONIC

Route: SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY

Species/Strain: Rat/F 344/N

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Test Compound: Ozone/NNK

CAS Number: OZONNNKCOMB

Date Report Requested: 10/21/2014

Time Report Requested: 05:28:17

First Dose M/F: NA / NA

Lab: BNW

ANIMAL ID: 8208

TRT#: 2

SEX: Male

DAY ON TEST: 710

DOSE: .1MG/KG NNK/AIR

DISP: Moribund Sacrifice

HISTO: 26244

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

\* Larynx

\* Lymph Node, Mediastinal

\* Trachea

MISSING

\* Lymph Node, Bronchial

OBSERVATIONS

Islets, Pancreatic [ Adenoma TGLS = 6-9 ]		Adenoma	
Kidney [ Nephropathy TGLS = 7-8 ]		Nephropathy	Moderate
* Lung [ Hyperplasia TGLS = 2,3,11-3 ]	Alveolar Epith Alveolus	Fibrosis Hyperplasia Infiltration Cellular	Focal, Mild Atypical, Moderate Histiocyte, Mild
Mammary Gland [ Galactocoele TGLS = 1-8 ]		Galactocoele Inflammation	Moderate Chronic, Moderate
* Nose	Olfactory Epi Lateral Wall	Degeneration Hyperplasia Inflammation	Hyaline, Minimal Minimal Suppurative, Minimal
Peritoneum [ Inflammation TGLS = 9-7 ]	Olfactory Epi	Metaplasia Inflammation	Minimal Chronic, Minimal
Pituitary Gland [ Adenoma TGLS = 4-8 ]	Pars Distalis	Adenoma	
Skin [ Inflammation TGLS = 10-6 ]	SOA, Subcut Tiss	Inflammation	Chronic, Minimal
Spleen [ Leukemia Mononuclear TGLS = 5-9 ]		Leukemia Mononuclear	

PRIMARY CAUSE OF DEATH

- Pituitary Gland Pars Distalis Adenoma

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 88034-07

Test Type: CHRONIC

Route: SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY

Species/Strain: Rat/F 344/N

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Test Compound: Ozone/NNK

CAS Number: OZONNNKCOMB

Date Report Requested: 10/21/2014

Time Report Requested: 05:28:17

First Dose M/F: NA / NA

Lab: BNW

ANIMAL ID: 8209

TRT#: 2

SEX: Male

DAY ON TEST: 683

DOSE: .1MG/KG NNK/AIR

DISP: Moribund Sacrifice

HISTO: 26245

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

\* Larynx \* Trachea

OBSERVATIONS

Kidney		Leukemia Mononuclear Nephropathy	Moderate
[ Leukemia Mononuclear TGLS = 10-12+13 ]			
Liver		Leukemia Mononuclear	
[ Leukemia Mononuclear TGLS = 8-14 ]			
* Lung		Leukemia Mononuclear	
Lymph Node	Iliac Renal	Leukemia Mononuclear Leukemia Mononuclear Leukemia Mononuclear	
[ Leukemia Mononuclear TGLS = 11-8 ]			
[ Leukemia Mononuclear TGLS = 12-9 ]			
* Lymph Node, Bronchial		Leukemia Mononuclear	
Lymph Node, Mandibular		Leukemia Mononuclear	
[ Leukemia Mononuclear TGLS = 1-8 ]			
* Lymph Node, Mediastinal		Leukemia Mononuclear	
[ Leukemia Mononuclear TGLS = 2-2 ]			
Lymph Node, Mesenteric		Leukemia Mononuclear	
[ Leukemia Mononuclear TGLS = 16-10 ]			
Mammary Gland		Galactoceles	Marked
[ Galactoceles TGLS = 14-11 ]			
Mesentery	Fat	Necrosis	Moderate
[ Necrosis TGLS = 5-15 ]			
* Nose	Olfactory Epi Lateral Wall	Degeneration Hyperplasia Leukemia Mononuclear	Hyaline, Minimal Mild
Peritoneum		Inflammation	Chronic, Minimal
[ Inflammation TGLS = 13-6 ]			
Pituitary Gland	Pars Distalis	Adenoma	

\* PROTOCOL REQUIRED TISSUE

**Experiment Number:** 88034-07

**Test Type:** CHRONIC

**Route:** SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY

**Species/Strain:** Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

**Test Compound:** Ozone/NNK

**CAS Number:** OZONNNKCOMB

**Date Report Requested:** 10/21/2014

**Time Report Requested:** 05:28:17

**First Dose M/F:** NA / NA

**Lab:** BNW

**ANIMAL ID:** 8209

**TRT#:** 2

**SEX:** Male

**DAY ON TEST:** 683

**DOSE:** .1MG/KG NNK/AIR

**DISP:** Moribund Sacrifice

**HISTO:** 26245

**ORGAN AND ACCOUNTABLE SITE STATUS**

		Leukemia Mononuclear	
[ Adenoma TGLS = 3-12 ]			
Skin	SOA, Subcut Tiss	Inflammation	Chronic, Minimal
	SOA, Subcut Tiss	Sarcoma	
Note: There is a small sarcoma adjacent to one of the inflammatory nodules in the subcutaneous injection site in slide #7.			
[ Inflammation TGLS = 15-7 ]			
Spleen		Fibrosis	Moderate
		Leukemia Mononuclear	
[ Fibrosis TGLS = 9-13 ]			
Testes	Interstit Cell	Adenoma	
		Atrophy	Moderate
[ Adenoma TGLS = 6-11 ]			
[ Atrophy TGLS = 7-11 ]			
Urinary Bladder		Inflammation	Chronic Active, Moderate
[ Inflammation TGLS = 4-11 ]			
PRIMARY CAUSE OF DEATH	- Spleen	Leukemia Mononuclear	

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 88034-07

Test Type: CHRONIC

Route: SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY

Species/Strain: Rat/F 344/N

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Test Compound: Ozone/NNK

CAS Number: OZONNNKCOMB

Date Report Requested: 10/21/2014

Time Report Requested: 05:28:17

First Dose M/F: NA / NA

Lab: BNW

ANIMAL ID: 8210

TRT#: 2

SEX: Male

DAY ON TEST: 620

DOSE: .1MG/KG NNK/AIR

DISP: Moribund Sacrifice

HISTO: 26246

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

\* Trachea

OBSERVATIONS

Kidney		Nephropathy	Moderate
[ Nephropathy TGLS = 12-10 ]			
* Larynx		Foreign Body	
Liver		Hepatodiaphragmatic Nodule	
		Hyperplasia	Focal, Marked
		Leukemia Mononuclear	
[ Hepatodiaphragmatic Nodule TGLS = 9-9 ]			
[ Hyperplasia TGLS = 10-8 ]			
[ Leukemia Mononuclear TGLS = 8-9 ]			
* Lung	Alveolar Epith	Hyperplasia	Atypical, Mild
[ Hyperplasia TGLS = 2-7 ]			
* Lymph Node, Bronchial		Hemorrhage	Mild
Lymph Node, Mandibular		Leukemia Mononuclear	
[ Leukemia Mononuclear TGLS = 1-7 ]			
* Lymph Node, Mediastinal		Leukemia Mononuclear	
Mesentery	Fat	Necrosis	Moderate
[ Necrosis TGLS = 5-7 ]			
* Nose	Olfactory Epi	Degeneration	Hyaline, Minimal
Pituitary Gland	Pars Distalis	Adenoma	
[ Adenoma TGLS = 4-8 ]			
Skin	SOA, Subcut Tiss	Inflammation	Chronic, Minimal
	Subcut Tiss	Melanoma Benign	
[ Inflammation TGLS = 11-6 ]			
[ Melanoma Benign TGLS = 3-8 ]			
Spleen		Fibrosis	Moderate
		Leukemia Mononuclear	
[ Fibrosis TGLS = 7-7 ]			

\* PROTOCOL REQUIRED TISSUE

**Experiment Number:** 88034-07

**Test Type:** CHRONIC

**Route:** SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY

**Species/Strain:** Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

**Test Compound:** Ozone/NNK

**CAS Number:** OZONNNKCOMB

**Date Report Requested:** 10/21/2014

**Time Report Requested:** 05:28:17

**First Dose M/F:** NA / NA

**Lab:** BNW

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**ANIMAL ID:** 8210

**TRT#:** 2

**SEX:** Male

**DAY ON TEST:** 620

**DOSE:** .1MG/KG NNK/AIR

**DISP:** Moribund Sacrifice

**HISTO:** 26246

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**ORGAN AND ACCOUNTABLE SITE STATUS**

---

[ Leukemia Mononuclear TGLS = 6-7 ]

---

**PRIMARY CAUSE OF DEATH**

- Spleen Leukemia Mononuclear

---

\* PROTOCOL REQUIRED TISSUE



**Experiment Number:** 88034-07

**Test Type:** CHRONIC

**Route:** SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY

**Species/Strain:** Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

**Test Compound:** Ozone/NNK

**CAS Number:** OZONNNKCOMB

**Date Report Requested:** 10/21/2014

**Time Report Requested:** 05:28:17

**First Dose M/F:** NA / NA

**Lab:** BNW

**ANIMAL ID:** 8211

**TRT#:** 2

**SEX:** Male

**DAY ON TEST:** 460

**DOSE:** .1MG/KG NNK/AIR

**DISP:** Moribund Sacrifice

**HISTO:** 26247

**ORGAN AND ACCOUNTABLE SITE STATUS**

**NORMAL**

\* Larynx

\* Lymph Node, Mediastinal

\* Trachea

**MISSING**

\* Lymph Node, Bronchial

**OBSERVATIONS**

\* Lung

[ Leukemia Mononuclear TGLS = 3-3 ]

Leukemia Mononuclear

\* Nose

Olfactory Epi

Degeneration

Hyaline, Minimal

Skin

SOA, Subcut Tiss

Inflammation

Chronic, Minimal

[ Inflammation TGLS = 4-6 ]

Spleen

Leukemia Mononuclear

[ Leukemia Mononuclear TGLS = 2-7 ]

Thyroid Gland

Carcinoma

[ Carcinoma TGLS = 1-7 ]

**PRIMARY CAUSE OF DEATH**

- Spleen Leukemia Mononuclear

\* PROTOCOL REQUIRED TISSUE

**Experiment Number:** 88034-07

**Test Type:** CHRONIC

**Route:** SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY

**Species/Strain:** Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

**Test Compound:** Ozone/NNK

**CAS Number:** OZONNNKCOMB

**Date Report Requested:** 10/21/2014

**Time Report Requested:** 05:28:17

**First Dose M/F:** NA / NA

**Lab:** BNW

**ANIMAL ID:** 8212

**TRT#:** 2

**SEX:** Male

**DAY ON TEST:** 736

**DOSE:** .1MG/KG NNK/AIR

**DISP:** Terminal Sacrifice

**HISTO:** 26248

**ORGAN AND ACCOUNTABLE SITE STATUS**

**NORMAL**

\* Larynx

\* Lymph Node, Bronchial

\* Lymph Node, Mediastinal

\* Trachea

**OBSERVATIONS**

Liver [ Degeneration TGLS = 8-10 ]		Degeneration	Cystic, Mild
* Lung [ Hyperplasia TGLS = 7-7 ]	Alveolar Epith	Hyperplasia	Atypical, Mild
Mesentery [ Necrosis TGLS = 5-11 ]	Fat	Necrosis	Moderate
* Nose Pituitary Gland [ Adenoma TGLS = 2-8 ]	Olfactory Epi Pars Distalis	Degeneration Adenoma	Hyaline, Minimal
Skin [ Inflammation TGLS = 6-6 ]	SOA, Subcut Tiss	Inflammation	Chronic, Minimal
Spleen [ Fibrosis TGLS = 3-8 ]		Fibrosis	Mild
Testes [ Adenoma TGLS = 4-9 ]	Interstit Cell	Adenoma	
Thyroid Gland [ Adenoma TGLS = 1-8 ]	Bilateral, C Cell	Adenoma	

PRIMARY CAUSE OF DEATH

-

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 88034-07

Test Type: CHRONIC

Route: SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY

Species/Strain: Rat/F 344/N

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Test Compound: Ozone/NNK

CAS Number: OZONNNKCOMB

Date Report Requested: 10/21/2014

Time Report Requested: 05:28:17

First Dose M/F: NA / NA

Lab: BNW

ANIMAL ID: 8213

TRT#: 2

SEX: Male

DAY ON TEST: 662

DOSE: .1MG/KG NNK/AIR

DISP: Moribund Sacrifice

HISTO: 26249

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

\* Larynx

Penis

\* Trachea

OBSERVATIONS

\* Lung

Leukemia Mononuclear

\* Lymph Node, Bronchial

Leukemia Mononuclear

\* Lymph Node, Mediastinal

Leukemia Mononuclear

[ Leukemia Mononuclear TGLS = 6-2 ]

Mesentery

Fat

Necrosis

Moderate

[ Necrosis TGLS = 5-8 ]

\* Nose

Olfactory Epi

Degeneration

Hyaline, Minimal

Penis

Note: No microscopic lesion corresponding to TGL #4 (penis, enlarged, 7 mm.dia., pale) was observed. The gross change was probably due to edema.

Peritoneum

Inflammation

Chronic, Minimal

[ Inflammation TGLS = 2-7 ]

Skin

SOA, Subcut Tiss

Inflammation

Chronic, Minimal

[ Inflammation TGLS = 3-6 ]

Spleen

Leukemia Mononuclear

[ Leukemia Mononuclear TGLS = 1-8 ]

PRIMARY CAUSE OF DEATH

- Spleen Leukemia Mononuclear

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 88034-07

Test Type: CHRONIC

Route: SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY

Species/Strain: Rat/F 344/N

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Test Compound: Ozone/NNK

CAS Number: OZONNNKCOMB

Date Report Requested: 10/21/2014

Time Report Requested: 05:28:17

First Dose M/F: NA / NA

Lab: BNW

ANIMAL ID: 8214

TRT#: 2

SEX: Male

DAY ON TEST: 641

DOSE: .1MG/KG NNK/AIR

DISP: Moribund Sacrifice

HISTO: 26250

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

\* Larynx \* Trachea

OBSERVATIONS

Liver	Bile Duct	Hyperplasia Leukemia Mononuclear	Moderate
[ Leukemia Mononuclear TGLS = 7-9 ]			
* Lung	Alveolar Epith	Hyperplasia Leukemia Mononuclear	Atypical, Mild
[ Leukemia Mononuclear TGLS = 1-3 ]			
* Lymph Node, Bronchial		Leukemia Mononuclear	
* Lymph Node, Mediastinal		Leukemia Mononuclear	
* Nose	Olfactory Epi	Degeneration	Hyaline, Minimal
Penis		Inflammation	Chronic Active, Moderate
[ Inflammation TGLS = 10-10 ]			
Peritoneum		Inflammation	Chronic, Minimal
[ Inflammation TGLS = 9-7 ]			
Preputial Gland		Inflammation	Chronic Active, Marked
[ Inflammation TGLS = 2,3-11 ]			
Skin	SOA, Subcut Tiss	Inflammation	Chronic, Minimal
[ Inflammation TGLS = 8-6 ]			
Spleen		Leukemia Mononuclear	
[ Leukemia Mononuclear TGLS = 5,6-8 ]			
Testes	Interstit Cell	Adenoma	
[ Adenoma TGLS = 4-8 ]			

PRIMARY CAUSE OF DEATH - Spleen Leukemia Mononuclear

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 88034-07

Test Type: CHRONIC

Route: SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY

Species/Strain: Rat/F 344/N

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Test Compound: Ozone/NNK

CAS Number: OZONNNKCOMB

Date Report Requested: 10/21/2014

Time Report Requested: 05:28:17

First Dose M/F: NA / NA

Lab: BNW

ANIMAL ID: 8215

TRT#: 2

SEX: Male

DAY ON TEST: 704

DOSE: .1MG/KG NNK/AIR

DISP: Moribund Sacrifice

HISTO: 26251

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

\* Larynx \* Trachea

OBSERVATIONS

Kidney		Leukemia Mononuclear Nephropathy	Mild
[ Leukemia Mononuclear TGLS = 7-8 ]			
* Lung		Leukemia Mononuclear	
[ Leukemia Mononuclear TGLS = 5-3 ]			
* Lymph Node, Bronchial		Leukemia Mononuclear	
Lymph Node, Mandibular		Leukemia Mononuclear	
[ Leukemia Mononuclear TGLS = 4-12 ]			
* Lymph Node, Mediastinal		Leukemia Mononuclear	
Lymph Node, Mesenteric		Leukemia Mononuclear	
[ Leukemia Mononuclear TGLS = 12-13 ]			
* Nose	Olfactory Epi Lateral Wall	Degeneration Hyperplasia Leukemia Mononuclear	Hyaline, Minimal Mild
	Olfactory Epi	Metaplasia	Minimal
Peritoneum		Inflammation	Chronic, Minimal
[ Inflammation TGLS = 9-6 ]			
Pituitary Gland	Pars Distalis	Leukemia Mononuclear	
[ Leukemia Mononuclear TGLS = 6-9 ]			
Preputial Gland		Inflammation	Chronic Active, Mild
[ Inflammation TGLS = 3-10 ]			
Skin	SOA, Subcut Tiss	Inflammation Keratoacanthoma	Chronic, Minimal
[ Inflammation TGLS = 11-7 ]			
[ Keratoacanthoma TGLS = 10-11 ]			
Spleen		Leukemia Mononuclear	
[ Leukemia Mononuclear TGLS = 8-9 ]			

\* PROTOCOL REQUIRED TISSUE

**Experiment Number:** 88034-07

**Test Type:** CHRONIC

**Route:** SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY

**Species/Strain:** Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

**Test Compound:** Ozone/NNK

**CAS Number:** OZONNNKCOMB

**Date Report Requested:** 10/21/2014

**Time Report Requested:** 05:28:17

**First Dose M/F:** NA / NA

**Lab:** BNW

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**ANIMAL ID:** 8215

**TRT#:** 2

**SEX:** Male

**DAY ON TEST:** 704

**DOSE:** .1MG/KG NNK/AIR

**DISP:** Moribund Sacrifice

**HISTO:** 26251

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**ORGAN AND ACCOUNTABLE SITE STATUS**

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PRIMARY CAUSE OF DEATH

- Spleen Leukemia Mononuclear

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\* PROTOCOL REQUIRED TISSUE

Experiment Number: 88034-07

Test Type: CHRONIC

Route: SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY

Species/Strain: Rat/F 344/N

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Test Compound: Ozone/NNK

CAS Number: OZONNNKCOMB

Date Report Requested: 10/21/2014

Time Report Requested: 05:28:17

First Dose M/F: NA / NA

Lab: BNW

ANIMAL ID: 8216

TRT#: 2

SEX: Male

DAY ON TEST: 589

DOSE: .1MG/KG NNK/AIR

DISP: Moribund Sacrifice

HISTO: 26252

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

\* Larynx

\* Lung

\* Lymph Node, Bronchial

\* Trachea

OBSERVATIONS

Kidney

[ Nephropathy TGLS = 8-9 ]

Nephropathy

Moderate

Liver

[ Leukemia Mononuclear TGLS = 3-8 ]

Leukemia Mononuclear

\* Lung

Note: There was no histologic lesion corresponding to the red/pale color change (TGL #1) observed grossly in the lung.

\* Lymph Node, Mediastinal

Leukemia Mononuclear

\* Nose

Olfactory Epi

Degeneration

Hyaline, Mild

Pituitary Gland

Pars Distalis

Adenoma

[ Adenoma TGLS = 2-8 ]

Skin

SOA, Subcut Tiss

Inflammation

Chronic, Minimal

[ Inflammation TGLS = 7-6 ]

Spleen

Fibrosis

Moderate

Hemorrhage

Moderate

Leukemia Mononuclear

Note: TGL 4 is a large blood clot coded as hemorrhage.

[ Fibrosis TGLS = 5-7 ]

[ Hemorrhage TGLS = 4-7 ]

[ Leukemia Mononuclear TGLS = 6-7 ]

PRIMARY CAUSE OF DEATH

- Spleen Leukemia Mononuclear

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 88034-07

Test Type: CHRONIC

Route: SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY

Species/Strain: Rat/F 344/N

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Test Compound: Ozone/NNK

CAS Number: OZONNNKCOMB

Date Report Requested: 10/21/2014

Time Report Requested: 05:28:17

First Dose M/F: NA / NA

Lab: BNW

ANIMAL ID: 8217

TRT#: 2

SEX: Male

DAY ON TEST: 501

DOSE: .1MG/KG NNK/AIR

DISP: Moribund Sacrifice

HISTO: 26253

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

\* Trachea

OBSERVATIONS

* Larynx		Foreign Body Inflammation	Suppurative, Mild
Liver		Leukemia Mononuclear	
[ Leukemia Mononuclear TGLS = 7-10 ]			
* Lung		Leukemia Mononuclear	
[ Leukemia Mononuclear TGLS = 3,4-3 ]			
* Lymph Node, Bronchial		Leukemia Mononuclear	
[ Leukemia Mononuclear TGLS = 2-3 ]			
Lymph Node, Mandibular		Leukemia Mononuclear	
[ Leukemia Mononuclear TGLS = 1-11 ]			
* Lymph Node, Mediastinal		Leukemia Mononuclear	
Lymph Node, Mesenteric		Leukemia Mononuclear	
[ Leukemia Mononuclear TGLS = 10-9 ]			
* Nose	Olfactory Epi	Degeneration Inflammation	Hyaline, Minimal Chronic, Minimal
Peritoneum			
[ Inflammation TGLS = 8-7 ]			
Skin	SOA, Subcut Tiss	Inflammation	Chronic, Minimal
[ Inflammation TGLS = 9-6 ]			
Spleen		Leukemia Mononuclear	
[ Leukemia Mononuclear TGLS = 5,6-8 ]			

PRIMARY CAUSE OF DEATH

- Spleen Leukemia Mononuclear

\* PROTOCOL REQUIRED TISSUE



**Experiment Number:** 88034-07

**Test Type:** CHRONIC

**Route:** SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY

**Species/Strain:** Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

**Test Compound:** Ozone/NNK

**CAS Number:** OZONNNKCOMB

**Date Report Requested:** 10/21/2014

**Time Report Requested:** 05:28:17

**First Dose M/F:** NA / NA

**Lab:** BNW

**ANIMAL ID:** 8218

**TRT#:** 2

**SEX:** Male

**DAY ON TEST:** 518

**DOSE:** .1MG/KG NNK/AIR

**DISP:** Natural Death

**HISTO:** 26254

**ORGAN AND ACCOUNTABLE SITE STATUS**

**NORMAL**

Intestine Large, Cecum

\* Larynx

\* Lymph Node, Bronchial

\* Lymph Node, Mediastinal

\* Trachea

**OBSERVATIONS**

Int Lg Cecum

Note: No microscopic lesion corresponding to TGL #4 (lg. int., cecum, focus, 5mm dia. dark) was observed. Gross change was probably due to autolysis.

\* Lung

Alveolar Epith

Hyperplasia

Atypical, Minimal

Alveolus

Infiltration Cellular

Histiocyte, Focal, Minimal

Note: Alveolar epithelial hyperplasia with histiocytic infiltration is a SOLITARY FOCAL lesion differing from ozone-induced change which is MULTIFOCAL.

Note: TGL #1 (lung mottled red) is due to post-mortem hypostatic congestion, not a pathologic change. Thus NCL was entered on IANR form.

\* Nose

Olfactory Epi

Degeneration

Hyaline, Minimal

Pituitary Gland

Pars Distalis

Adenoma

[ Adenoma TGLS = 2-7 ]

Skin

SOA, Subcut Tiss

Inflammation

Chronic, Minimal

[ Inflammation TGLS = 3-6 ]

**PRIMARY CAUSE OF DEATH**

- UNCERTAIN

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 88034-07

Test Type: CHRONIC

Route: SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY

Species/Strain: Rat/F 344/N

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Test Compound: Ozone/NNK

CAS Number: OZONNNKCOMB

Date Report Requested: 10/21/2014

Time Report Requested: 05:28:17

First Dose M/F: NA / NA

Lab: BNW

ANIMAL ID: 8219

TRT#: 2

SEX: Male

DAY ON TEST: 633

DOSE: .1MG/KG NNK/AIR

DISP: Moribund Sacrifice

HISTO: 26255

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

\* Larynx \* Trachea

MISSING

\* Lymph Node, Bronchial \* Lymph Node, Mediastinal

OBSERVATIONS

Kidney		Nephropathy	Mild
[ Nephropathy TGLS = 5-10 ]			
Liver		Leukemia Mononuclear	
[ Leukemia Mononuclear TGLS = 4-9 ]			
* Lung		Alveolar/Bronchiolar Adenoma	
		Leukemia Mononuclear	
[ Leukemia Mononuclear TGLS = 2-3 ]			
Mesentery	Fat	Necrosis	Moderate
[ Necrosis TGLS = 8-8 ]			
* Nose	Olfactory Epi	Degeneration	Hyaline, Minimal
	Olfactory Epi	Metaplasia	Mild
Peritoneum		Inflammation	Chronic, Minimal
[ Inflammation TGLS = 9-7 ]			
Pituitary Gland	Pars Distalis	Adenoma	
[ Adenoma TGLS = 3-8 ]			
Skin	SOA, Subcut Tiss	Inflammation	Chronic, Minimal
		Inflammation	Chronic, Moderate
[ Inflammation TGLS = 1-8 ]			
[ Inflammation TGLS = 10-6 ]			
Spleen		Fibrosis	Mild
		Leukemia Mononuclear	
[ Fibrosis TGLS = 7-8 ]			
[ Leukemia Mononuclear TGLS = 6-8 ]			

PRIMARY CAUSE OF DEATH - Spleen Leukemia Mononuclear

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 88034-07

Test Type: CHRONIC

Route: SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY

Species/Strain: Rat/F 344/N

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Test Compound: Ozone/NNK

CAS Number: OZONNNKCOMB

Date Report Requested: 10/21/2014

Time Report Requested: 05:28:17

First Dose M/F: NA / NA

Lab: BNW

ANIMAL ID: 8220	TRT#: 2	SEX: Male	DAY ON TEST: 655
	DOSE: .1MG/KG NNK/AIR	DISP: Moribund Sacrifice	HISTO: 26256

ORGAN AND ACCOUNTABLE SITE STATUS

<b>NORMAL</b>			
* Larynx	* Lung	* Lymph Node, Bronchial	* Trachea

<b>MISSING</b>			
* Lymph Node, Mediastinal			

<b>OBSERVATIONS</b>			
Liver		Leukemia Mononuclear	
[ Leukemia Mononuclear TGLS = 3-8 ]			
* Nose	Olfactory Epi	Degeneration	Hyaline, Minimal
Peritoneum		Inflammation	Chronic, Minimal
[ Inflammation TGLS = 4-7 ]			
Pituitary Gland	Pars Distalis	Adenoma	
[ Adenoma TGLS = 1-8 ]			
Skin	SOA, Subcut Tiss	Inflammation	Chronic, Minimal
[ Inflammation TGLS = 5-6 ]			
Spleen		Hemorrhage	Marked
		Leukemia Mononuclear	
		Necrosis	Marked
		Sarcoma	
[ Hemorrhage TGLS = 2-9 ]			

PRIMARY CAUSE OF DEATH	- Spleen Leukemia Mononuclear
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\* PROTOCOL REQUIRED TISSUE

**Experiment Number:** 88034-07

**Test Type:** CHRONIC

**Route:** SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY

**Species/Strain:** Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

**Test Compound:** Ozone/NNK

**CAS Number:** OZONNNKCOMB

**Date Report Requested:** 10/21/2014

**Time Report Requested:** 05:28:17

**First Dose M/F:** NA / NA

**Lab:** BNW

**ANIMAL ID:** 8221

**TRT#:** 2

**SEX:** Male

**DAY ON TEST:** 625

**DOSE:** .1MG/KG NNK/AIR

**DISP:** Moribund Sacrifice

**HISTO:** 26257

**ORGAN AND ACCOUNTABLE SITE STATUS**

**NORMAL**

* Larynx	* Lymph Node, Bronchial	* Lymph Node, Mediastinal	Preputial Gland
* Trachea			

**OBSERVATIONS**

Kidney		Nephropathy	Marked
[ Nephropathy TGLS = 4-9 ]			
* Lung		Alveolar/Bronchiolar Adenoma	
		Hemorrhage	Moderate
[ Alveolar/Bronchiolar Adenoma TGLS = 1-3 ]			
* Nose	Olfactory Epi	Degeneration	Hyaline, Minimal
Peritoneum		Inflammation	Chronic, Minimal
[ Inflammation TGLS = 5-7 ]			
Pituitary Gland	Pars Distalis	Adenoma	
[ Adenoma TGLS = 2-8 ]			
Preputial GI			
Note: No microscopic lesion corresponding to TGL #3 (Preputial gland, bilateral, enlarged) was observed. Enlargement was due to distention with secretory material.			
Skin	SOA, Subcut Tiss	Inflammation	Chronic, Minimal
[ Inflammation TGLS = 6-6 ]			

**PRIMARY CAUSE OF DEATH**

- Pituitary Gland Pars Distalis Adenoma

\* PROTOCOL REQUIRED TISSUE

**Experiment Number:** 88034-07

**Test Type:** CHRONIC

**Route:** SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY

**Species/Strain:** Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

**Test Compound:** Ozone/NNK

**CAS Number:** OZONNNKCOMB

**Date Report Requested:** 10/21/2014

**Time Report Requested:** 05:28:17

**First Dose M/F:** NA / NA

**Lab:** BNW

**ANIMAL ID:** 8222

**TRT#:** 2

**SEX:** Male

**DAY ON TEST:** 635

**DOSE:** .1MG/KG NNK/AIR

**DISP:** Moribund Sacrifice

**HISTO:** 26258

**ORGAN AND ACCOUNTABLE SITE STATUS**

**NORMAL**

\* Larynx

\* Lymph Node, Mediastinal

\* Trachea

**MISSING**

\* Lymph Node, Bronchial

**OBSERVATIONS**

Kidney [ Nephropathy TGLS = 1-8 ]		Nephropathy	Marked
Liver [ Vacuolization Cytoplasmic TGLS = 2-9 ]		Vacuolization Cytoplasmic	Moderate
* Lung Lymph Node [ Inflammation TGLS = 3-9 ]	Alveolar Epith Renal	Hyperplasia Inflammation	Atypical, Minimal Granulomatous, Mild
* Nose Oral Mucosa [ Squamous Cell Papilloma TGLS = 7-10 ]	Olfactory Epi Pharyngeal	Degeneration Squamous Cell Papilloma	Hyaline, Minimal
Peritoneum [ Inflammation TGLS = 4-7 ]		Inflammation	Chronic, Minimal
Pituitary Gland [ Adenoma TGLS = 6-9 ]	Pars Distalis	Adenoma	
Skin [ Inflammation TGLS = 5-6 ]	SOA, Subcut Tiss	Inflammation	Chronic, Minimal

**PRIMARY CAUSE OF DEATH**

- Kidney Nephropathy

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 88034-07

Test Type: CHRONIC

Route: SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY

Species/Strain: Rat/F 344/N

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Test Compound: Ozone/NNK

CAS Number: OZONNNKCOMB

Date Report Requested: 10/21/2014

Time Report Requested: 05:28:17

First Dose M/F: NA / NA

Lab: BNW

ANIMAL ID: 8223

TRT#: 2

SEX: Male

DAY ON TEST: 589

DOSE: .1MG/KG NNK/AIR

DISP: Moribund Sacrifice

HISTO: 26259

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

\* Larynx \* Trachea

OBSERVATIONS

Heart		Necrosis	Moderate
[ Necrosis TGLS = 1-7 ]			
Liver		Leukemia Mononuclear	
[ Leukemia Mononuclear TGLS = 5-8 ]			
* Lung		Hemorrhage	Mild
		Leukemia Mononuclear	
[ Hemorrhage TGLS = 2-3 ]			
[ Leukemia Mononuclear TGLS = 3-3 ]			
* Lymph Node, Bronchial		Leukemia Mononuclear	
* Lymph Node, Mediastinal		Leukemia Mononuclear	
* Nose	Olfactory Epi	Degeneration	Hyaline, Mild
Pituitary Gland	Pars Distalis	Adenoma	
[ Adenoma TGLS = 4-8 ]			
Skin	SOA, Subcut Tiss	Inflammation	Chronic, Minimal
[ Inflammation TGLS = 8-6 ]			
Spleen		Leukemia Mononuclear	
[ Leukemia Mononuclear TGLS = 6-8 ]			
Testes	Interstit Cell	Adenoma	
[ Adenoma TGLS = 7-8 ]			

PRIMARY CAUSE OF DEATH - Spleen Leukemia Mononuclear

\* PROTOCOL REQUIRED TISSUE

**Experiment Number:** 88034-07

**Test Type:** CHRONIC

**Route:** SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY

**Species/Strain:** Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

**Test Compound:** Ozone/NNK

**CAS Number:** OZONNNKCOMB

**Date Report Requested:** 10/21/2014

**Time Report Requested:** 05:28:17

**First Dose M/F:** NA / NA

**Lab:** BNW

**ANIMAL ID:** 8224

**TRT#:** 2

**SEX:** Male

**DAY ON TEST:** 557

**DOSE:** .1MG/KG NNK/AIR

**DISP:** Moribund Sacrifice

**HISTO:** 26260

**ORGAN AND ACCOUNTABLE SITE STATUS**

**NORMAL**

* Larynx	* Lung	* Lymph Node, Bronchial	* Lymph Node, Mediastinal
* Trachea			

**OBSERVATIONS**

Islets, Pancreatic [ Adenoma TGLS = 2-8 ]		Adenoma	
Lymph Node [ Infiltration Cellular TGLS = 3-8 ]	Renal	Infiltration Cellular	Plasma Cell, Mild
* Nose	Olfactory Epi	Degeneration	Hyaline, Mild
Peritoneum [ Inflammation TGLS = 4-7 ]		Inflammation	Chronic, Minimal
Pituitary Gland [ Adenoma TGLS = 1-7 ]	Pars Distalis	Adenoma	
Skin [ Inflammation TGLS = 5-6 ]	SOA, Subcut Tiss	Inflammation	Chronic, Minimal

**PRIMARY CAUSE OF DEATH**

- Pituitary Gland Pars Distalis Adenoma

\* PROTOCOL REQUIRED TISSUE

**Experiment Number:** 88034-07

**Test Type:** CHRONIC

**Route:** SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY

**Species/Strain:** Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

**Test Compound:** Ozone/NNK

**CAS Number:** OZONNNKCOMB

**Date Report Requested:** 10/21/2014

**Time Report Requested:** 05:28:17

**First Dose M/F:** NA / NA

**Lab:** BNW

**ANIMAL ID:** 8225

**TRT#:** 2

**SEX:** Male

**DAY ON TEST:** 686

**DOSE:** .1MG/KG NNK/AIR

**DISP:** Natural Death

**HISTO:** 26261

**ORGAN AND ACCOUNTABLE SITE STATUS**

**NORMAL**

* Larynx	* Lung	* Lymph Node, Bronchial	* Lymph Node, Mediastinal
* Trachea			

**OBSERVATIONS**

Liver		Hepatodiaphragmatic Nodule	
[ Hepatodiaphragmatic Nodule TGLS = 2-7 ]			
* Nose	Olfactory Epi	Degeneration	Hyaline, Minimal
Pituitary Gland	Pars Distalis	Adenoma	
[ Adenoma TGLS = 1-7 ]			
Skin	SOA, Subcut Tiss	Inflammation	Chronic, Minimal
	SOA, Subcut Tiss	Sarcoma	
[ Inflammation TGLS = 3-6 ]			
[ Sarcoma TGLS = 4-8 ]			

PRIMARY CAUSE OF DEATH - Pituitary Gland Pars Distalis Adenoma

CONTRIBUTORY CAUSE OF DEATH - Skin SOA Subcut Tiss Sarcoma

\* PROTOCOL REQUIRED TISSUE



Experiment Number: 88034-07

Test Type: CHRONIC

Route: SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY

Species/Strain: Rat/F 344/N

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Test Compound: Ozone/NNK

CAS Number: OZONNNKCOMB

Date Report Requested: 10/21/2014

Time Report Requested: 05:28:17

First Dose M/F: NA / NA

Lab: BNW

ANIMAL ID: 8226

TRT#: 2

SEX: Male

DAY ON TEST: 579

DOSE: .1MG/KG NNK/AIR

DISP: Moribund Sacrifice

HISTO: 26262

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

\* Larynx \* Trachea

OBSERVATIONS

Liver		Leukemia Mononuclear	
[ Leukemia Mononuclear TGLS = 5-8 ]			
* Lung		Leukemia Mononuclear	
Lymph Node		Leukemia Mononuclear	
Note: TGL #3 involves the axillary lymph node.			
[ Leukemia Mononuclear TGLS = 3-8 ]			
* Lymph Node, Bronchial		Leukemia Mononuclear	
Lymph Node, Mandibular		Leukemia Mononuclear	
[ Leukemia Mononuclear TGLS = 1-7 ]			
* Lymph Node, Mediastinal		Leukemia Mononuclear	
[ Leukemia Mononuclear TGLS = 2-2 ]			
Lymph Node, Mesenteric		Leukemia Mononuclear	
[ Leukemia Mononuclear TGLS = 6-9 ]			
Mesentery		Leukemia Mononuclear	
[ Leukemia Mononuclear TGLS = 7-10 ]			
* Nose	Olfactory Epi	Degeneration	Hyaline, Minimal
	Lateral Wall	Hyperplasia	Minimal
Peritoneum		Inflammation	Chronic, Minimal
[ Inflammation TGLS = 8-9 ]			
Skin	SOA, Subcut Tiss	Inflammation	Chronic, Minimal
[ Inflammation TGLS = 9-6 ]			
Spleen		Leukemia Mononuclear	
[ Leukemia Mononuclear TGLS = 4-7 ]			

PRIMARY CAUSE OF DEATH - Spleen Leukemia Mononuclear

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 88034-07

Test Type: CHRONIC

Route: SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY

Species/Strain: Rat/F 344/N

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Test Compound: Ozone/NNK

CAS Number: OZONNNKCOMB

Date Report Requested: 10/21/2014

Time Report Requested: 05:28:17

First Dose M/F: NA / NA

Lab: BNW

ANIMAL ID: 8227

TRT#: 2

SEX: Male

DAY ON TEST: 736

DOSE: .1MG/KG NNK/AIR

DISP: Terminal Sacrifice

HISTO: 26263

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

\* Larynx

\* Lung

\* Lymph Node, Mediastinal

\* Trachea

OBSERVATIONS

Liver

Bile Duct

Degeneration  
Hyperplasia  
Leukemia Mononuclear

Cystic, Mild  
Mild

[ Leukemia Mononuclear TGLS = 7-11 ]

\* Lymph Node, Bronchial

Lymph Node, Mesenteric

[ Leukemia Mononuclear TGLS = 6-9 ]

Leukemia Mononuclear  
Leukemia Mononuclear

Mammary Gland

[ Hyperplasia TGLS = 2-8 ]

Hyperplasia

Moderate

\* Nose

Olfactory Epi

Degeneration  
Hyperkeratosis  
Inflammation

Hyaline, Minimal  
Moderate  
Chronic, Minimal

Skin

SOA, Subcut Tiss

Note: The hyperkeratosis is a multifocal lesion involving the skin of the tail. Underlying dermis has a mild inflammatory cell infiltrate.

[ Hyperkeratosis TGLS = 1-6 ]

[ Inflammation TGLS = 8-7 ]

Spleen

Fibrosis  
Leukemia Mononuclear

Mild

[ Fibrosis TGLS = 5-9 ]

[ Leukemia Mononuclear TGLS = 4-9 ]

Testes

Interstit Cell

Adenoma

[ Adenoma TGLS = 3-10 ]

PRIMARY CAUSE OF DEATH

-

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 88034-07

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Date Report Requested: 10/21/2014

Test Type: CHRONIC

Test Compound: Ozone/NNK

Time Report Requested: 05:28:17

Route: SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY

CAS Number: OZONNNKCOMB

First Dose M/F: NA / NA

Species/Strain: Rat/F 344/N

Lab: BNW

ANIMAL ID: 8228

TRT#: 2

SEX: Male

DAY ON TEST: 715

DOSE: .1MG/KG NNK/AIR

DISP: Moribund Sacrifice

HISTO: 26264

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

\* Larynx

\* Lung

Lymph Node, Mandibular

\* Trachea

OBSERVATIONS

Kidney

Nephropathy

Moderate

[ Nephropathy TGLS = 5-7 ]

Lym Node Mand

Note: NO MICROSCOPICALLY CORRESPONDING LESION FOR TGLs = 1-7.

\* Lymph Node, Bronchial

Necrosis

Marked

\* Lymph Node, Mediastinal

Necrosis

Marked

\* Nose

Olfactory Epi

Degeneration

Hyaline, Minimal

Skin

SOA, Subcut Tiss

Inflammation

Chronic, Minimal

SOA, Subcut Tiss

Keratoacanthoma

Sarcoma

[ Inflammation TGLS = 7-6 ]

[ Keratoacanthoma TGLS = 6-8 ]

[ Sarcoma TGLS = 2-9+6 ]

Spleen

Fibrosis

Mild

[ Fibrosis TGLS = 4-7 ]

Testes

Interstit Cell

Adenoma

[ Adenoma TGLS = 3-11 ]

PRIMARY CAUSE OF DEATH

- Skin SOA Subcut Tiss Sarcoma

\* PROTOCOL REQUIRED TISSUE

**Experiment Number:** 88034-07

**Test Type:** CHRONIC

**Route:** SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY

**Species/Strain:** Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

**Test Compound:** Ozone/NNK

**CAS Number:** OZONNNKCOMB

**Date Report Requested:** 10/21/2014

**Time Report Requested:** 05:28:17

**First Dose M/F:** NA / NA

**Lab:** BNW

**ANIMAL ID:** 8229

**TRT#:** 2

**SEX:** Male

**DAY ON TEST:** 555

**DOSE:** .1MG/KG NNK/AIR

**DISP:** Moribund Sacrifice

**HISTO:** 26265

**ORGAN AND ACCOUNTABLE SITE STATUS**

**NORMAL**

* Larynx	* Lung	* Lymph Node, Bronchial	* Lymph Node, Mediastinal
* Trachea			

**OBSERVATIONS**

Kidney [ Nephropathy TGLS = 3-7 ]		Nephropathy	Moderate
* Nose	Olfactory Epi	Degeneration	Hyaline, Minimal
Peritoneum [ Inflammation TGLS = 4-8 ]		Inflammation	Chronic, Minimal
Pituitary Gland [ Adenoma TGLS = 2-7 ]	Pars Distalis	Adenoma	
Skin [ Inflammation TGLS = 5-6 ]	SOA, Subcut Tiss	Inflammation	Chronic, Minimal

**PRIMARY CAUSE OF DEATH**

- Pituitary Gland Pars Distalis Adenoma

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 88034-07

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Date Report Requested: 10/21/2014

Test Type: CHRONIC

Test Compound: Ozone/NNK

Time Report Requested: 05:28:17

Route: SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY

CAS Number: OZONNNKCOMB

First Dose M/F: NA / NA

Species/Strain: Rat/F 344/N

Lab: BNW

ANIMAL ID: 8230

TRT#: 2

SEX: Male

DAY ON TEST: 697

DOSE: .1MG/KG NNK/AIR

DISP: Moribund Sacrifice

HISTO: 26266

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

\* Larynx

Penis

\* Trachea

MISSING

\* Lymph Node, Bronchial

OBSERVATIONS

Kidney		Nephropathy	Moderate
[ Nephropathy TGLS = 5-9 ]			
Liver		Leukemia Mononuclear	
[ Leukemia Mononuclear TGLS = 4-7 ]			
* Lung	Alveolar Epith	Hyperplasia	Atypical, Minimal
		Leukemia Mononuclear	
* Lymph Node, Mediastinal		Leukemia Mononuclear	
* Nose	Olfactory Epi	Degeneration	Hyaline, Minimal
Oral Mucosa	Pharyngeal	Hyperplasia	Squamous, Moderate
[ Hyperplasia TGLS = 8-5 ]			
Penis			
Note: Penis is histologically normal thus NCL was recorded for TGL 1. TGL 1 was probably due to paraphimosis secondary to inflammation in prepuce (TGL 7).			
Pituitary Gland	Pars Distalis	Hyperplasia	Marked
[ Hyperplasia TGLS = 2-7 ]			
Skin	Prepuce	Inflammation	Suppurative, Moderate
	SOA, Subcut Tiss	Inflammation	Chronic, Minimal
[ Inflammation TGLS = 7-7 ]			
[ Inflammation TGLS = 6-6 ]			
Spleen		Leukemia Mononuclear	
[ Leukemia Mononuclear TGLS = 3-8 ]			

PRIMARY CAUSE OF DEATH

- Spleen Leukemia Mononuclear

\* PROTOCOL REQUIRED TISSUE

**Experiment Number:** 88034-07

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

**Date Report Requested:** 10/21/2014

**Test Type:** CHRONIC

**Test Compound:** Ozone/NNK

**Time Report Requested:** 05:28:17

**Route:** SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY

**CAS Number:** OZONNNKCOMB

**First Dose M/F:** NA / NA

**Species/Strain:** Rat/F 344/N

**Lab:** BNW

**ANIMAL ID:** 8231

**TRT#:** 2

**SEX:** Male

**DAY ON TEST:** 444

**DOSE:** .1MG/KG NNK/AIR

**DISP:** Moribund Sacrifice

**HISTO:** 26267

**ORGAN AND ACCOUNTABLE SITE STATUS**

**NORMAL**

\* Lung

\* Lymph Node, Mediastinal

Stomach, Glandular

\* Trachea

**MISSING**

\* Lymph Node, Bronchial

**OBSERVATIONS**

* Larynx		Inflammation	Suppurative, Minimal
* Nose	Olfactory Epi	Degeneration	Hyaline, Minimal
Pituitary Gland	Pars Distalis	Adenoma	
[ Adenoma TGLS = 1-7 ]			
Skin	SOA, Subcut Tiss	Inflammation	Chronic, Minimal
[ Inflammation TGLS = 3-6 ]			
Stom Gland			

Note: TGL #2 (Stomach glandular, lesion, dark) was not identified at trim; no lesion observed on section submitted. Thus NCL was entered on IANR form.

**PRIMARY CAUSE OF DEATH**

- Pituitary Gland Pars Distalis Adenoma

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 88034-07

Test Type: CHRONIC

Route: SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY

Species/Strain: Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

Test Compound: Ozone/NNK

CAS Number: OZONNNKCOMB

Date Report Requested: 10/21/2014

Time Report Requested: 05:28:17

First Dose M/F: NA / NA

Lab: BNW

ANIMAL ID: 8232

TRT#: 2

SEX: Male

DAY ON TEST: 704

DOSE: .1MG/KG NNK/AIR

DISP: Moribund Sacrifice

HISTO: 26268

**ORGAN AND ACCOUNTABLE SITE STATUS**

**NORMAL**

Adrenal Cortex

\* Larynx

\* Lymph Node, Bronchial

\* Trachea

**MISSING**

\* Lymph Node, Mediastinal

**OBSERVATIONS**

Islets, Pancreatic

Carcinoma

Note: TLG 7 involves the pancreatic islets rather than the pancreatic lymph node as was recorded in the IANR form.

[ Carcinoma TGLS = 7-10 ]

\* Lung

Alveolar Epith

Hyperplasia

Atypical, Mild

[ Hyperplasia TGLS = 5,6-7+8 ]

\* Nose

Olfactory Epi

Degeneration

Hyaline, Minimal

Pituitary Gland

Pars Distalis

Adenoma

[ Adenoma TGLS = 2-9 ]

Skin

Subcut Tiss

Fibroma

Chronic, Minimal

SOA, Subcut Tiss

Inflammation

[ Fibroma TGLS = 1-11 ]

[ Inflammation TGLS = 4-6 ]

Spleen

Fibrosis

Mild

[ Fibrosis TGLS = 3-9 ]

PRIMARY CAUSE OF DEATH

- Pituitary Gland Pars Distalis Adenoma

\* PROTOCOL REQUIRED TISSUE

**Experiment Number:** 88034-07

**Test Type:** CHRONIC

**Route:** SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY

**Species/Strain:** Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

**Test Compound:** Ozone/NNK

**CAS Number:** OZONNNKCOMB

**Date Report Requested:** 10/21/2014

**Time Report Requested:** 05:28:17

**First Dose M/F:** NA / NA

**Lab:** BNW

**ANIMAL ID:** 8233

**TRT#:** 2

**SEX:** Male

**DAY ON TEST:** 617

**DOSE:** .1MG/KG NNK/AIR

**DISP:** Moribund Sacrifice

**HISTO:** 26269

**ORGAN AND ACCOUNTABLE SITE STATUS**

**NORMAL**

\* Larynx

\* Lung

\* Lymph Node, Bronchial

\* Trachea

**INSUFFICIENT TISSUE**

\* Lymph Node, Mediastinal

**OBSERVATIONS**

Kidney [ Nephropathy TGLS = 3-8 ]		Nephropathy	Moderate
Liver [ Vacuolization Cytoplasmic TGLS = 2-9 ]		Vacuolization Cytoplasmic	Focal, Mild
* Nose	Olfactory Epi	Degeneration	Hyaline, Mild
Peritoneum [ Inflammation TGLS = 4-7 ]		Inflammation	Chronic, Minimal
Pituitary Gland [ Adenoma TGLS = 1-9 ]	Pars Distalis	Adenoma	
Skin [ Inflammation TGLS = 5-6 ]	SOA, Subcut Tiss	Inflammation	Chronic, Minimal

**PRIMARY CAUSE OF DEATH**

- Pituitary Gland Pars Distalis Adenoma

\* PROTOCOL REQUIRED TISSUE



**Experiment Number:** 88034-07

**Test Type:** CHRONIC

**Route:** SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY

**Species/Strain:** Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

**Test Compound:** Ozone/NNK

**CAS Number:** OZONNNKCOMB

**Date Report Requested:** 10/21/2014

**Time Report Requested:** 05:28:17

**First Dose M/F:** NA / NA

**Lab:** BNW

**ANIMAL ID:** 8234

**TRT#:** 2

**SEX:** Male

**DAY ON TEST:** 716

**DOSE:** .1MG/KG NNK/AIR

**DISP:** Moribund Sacrifice

**HISTO:** 26270

**ORGAN AND ACCOUNTABLE SITE STATUS**

**NORMAL**

\* Larynx

\* Lung

\* Lymph Node, Bronchial

\* Trachea

**MISSING**

\* Lymph Node, Mediastinal

**OBSERVATIONS**

Kidney [ Nephropathy TGLS = 3-8 ]		Nephropathy	Marked
* Nose	Olfactory Epi	Degeneration	Hyaline, Minimal
Peritoneum [ Inflammation TGLS = 6-7 ]		Inflammation	Chronic, Minimal
Pituitary Gland [ Adenoma TGLS = 2-9 ]	Pars Distalis	Adenoma	
Skin [ Inflammation TGLS = 7-6 ]	SOA, Subcut Tiss	Inflammation	Chronic, Minimal
Spleen [ Fibrosis TGLS = 4-9 ]		Fibrosis	Mild
Testes [ Adenoma TGLS = 5-8 ]	Interstit Cell	Adenoma	

**PRIMARY CAUSE OF DEATH**

- Pituitary Gland Pars Distalis Adenoma

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 88034-07

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Date Report Requested: 10/21/2014

Test Type: CHRONIC

Test Compound: Ozone/NNK

Time Report Requested: 05:28:17

Route: SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY

CAS Number: OZONNNKCOMB

First Dose M/F: NA / NA

Species/Strain: Rat/F 344/N

Lab: BNW

ANIMAL ID: 8235

TRT#: 2

SEX: Male

DAY ON TEST: 501

DOSE: .1MG/KG NNK/AIR

DISP: Moribund Sacrifice

HISTO: 26271

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

\* Larynx

Preputial Gland

\* Trachea

MISSING

\* Lymph Node, Bronchial

OBSERVATIONS

Kidney

Note: TGL #6 (focus 1mm white) could not be found at trim by 2 technicians. Thus no kidney section was submitted and NST entered on IANR form.

\* Lung

Alveolar Epith

Hyperplasia

Atypical, Mild

Leukemia Mononuclear

[ Leukemia Mononuclear TGLS = 1-7 ]

\* Lymph Node, Mediastinal

Leukemia Mononuclear

Lymph Node, Mesenteric

Leukemia Mononuclear

[ Leukemia Mononuclear TGLS = 8-10 ]

\* Nose

Olfactory Epi

Degeneration

Hyaline, Minimal

Peritoneum

Inflammation

Chronic, Minimal

[ Inflammation TGLS = 7-6 ]

Preputial GI

Note: TGL #2 (preputial gl enlarged, dark) is due to distention of duct with secretory material and is within normal limits. Thus NCL was entered on IANR form.

Skin

SOA, Subcut Tiss

Inflammation

Chronic, Minimal

[ Inflammation TGLS = 9-6 ]

Spleen

Fibrosis

Mild

Leukemia Mononuclear

[ Fibrosis TGLS = 4-9 ]

[ Leukemia Mononuclear TGLS = 3,5-8 ]

PRIMARY CAUSE OF DEATH

- Spleen Leukemia Mononuclear

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 88034-07

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Date Report Requested: 10/21/2014

Test Type: CHRONIC

Test Compound: Ozone/NNK

Time Report Requested: 05:28:17

Route: SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY

CAS Number: OZONNNKCOMB

First Dose M/F: NA / NA

Species/Strain: Rat/F 344/N

Lab: BNW

ANIMAL ID: 8236

TRT#: 2

SEX: Male

DAY ON TEST: 663

DOSE: .1MG/KG NNK/AIR

DISP: Moribund Sacrifice

HISTO: 26272

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

\* Larynx \* Trachea

OBSERVATIONS

Bone Marrow

Leukemia Mononuclear

Note: Extensive mononuclear cell leukemia infiltrate is present in bone marrow of skull and nasal cavity.

Kidney

Leukemia Mononuclear

Nephropathy

Mild

[ Leukemia Mononuclear TGLS = 8-16 ]

Liver

Leukemia Mononuclear

[ Leukemia Mononuclear TGLS = 7-17 ]

\* Lung

Leukemia Mononuclear

Lymph Node

Deep Cervical

Leukemia Mononuclear

Iliac

Leukemia Mononuclear

Renal

Leukemia Mononuclear

Leukemia Mononuclear

Note: TGL #2 consists of extensive mononuclear cell leukemia in axillary lymph node.

[ Leukemia Mononuclear TGLS = 11-11 ]

[ Leukemia Mononuclear TGLS = 10-10 ]

[ Leukemia Mononuclear TGLS = 2-8 ]

[ Leukemia Mononuclear TGLS = 6-9 ]

\* Lymph Node, Bronchial

Leukemia Mononuclear

Lymph Node, Mandibular

Leukemia Mononuclear

[ Leukemia Mononuclear TGLS = 1-7 ]

\* Lymph Node, Mediastinal

Leukemia Mononuclear

[ Leukemia Mononuclear TGLS = 4-2 ]

Lymph Node, Mesenteric

Leukemia Mononuclear

[ Leukemia Mononuclear TGLS = 13,15-12+13 ]

\* Nose

Olfactory Epi

Degeneration

Hyaline, Minimal

Peritoneum

Inflammation

Chronic, Minimal

[ Inflammation TGLS = 12-14 ]

\* PROTOCOL REQUIRED TISSUE

**Experiment Number:** 88034-07

**Test Type:** CHRONIC

**Route:** SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY

**Species/Strain:** Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

**Test Compound:** Ozone/NNK

**CAS Number:** OZONNNKCOMB

**Date Report Requested:** 10/21/2014

**Time Report Requested:** 05:28:17

**First Dose M/F:** NA / NA

**Lab:** BNW

**ANIMAL ID:** 8236

**TRT#:** 2

**SEX:** Male

**DAY ON TEST:** 663

**DOSE:** .1MG/KG NNK/AIR

**DISP:** Moribund Sacrifice

**HISTO:** 26272

**ORGAN AND ACCOUNTABLE SITE STATUS**

Pituitary Gland [ Leukemia Mononuclear TGLS = 5-15 ]		Leukemia Mononuclear	
Skin [ Inflammation TGLS = 14-6 ]	SOA, Subcut Tiss	Inflammation	Chronic, Minimal
Spleen [ Leukemia Mononuclear TGLS = 9-15 ]		Leukemia Mononuclear	
Thymus [ Leukemia Mononuclear TGLS = 3-2 ]		Leukemia Mononuclear	
PRIMARY CAUSE OF DEATH	- Spleen	Leukemia Mononuclear	

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 88034-07

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Date Report Requested: 10/21/2014

Test Type: CHRONIC

Test Compound: Ozone/NNK

Time Report Requested: 05:28:17

Route: SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY

CAS Number: OZONNNKCOMB

First Dose M/F: NA / NA

Species/Strain: Rat/F 344/N

Lab: BNW

ANIMAL ID: 8237

TRT#: 2

SEX: Male

DAY ON TEST: 736

DOSE: .1MG/KG NNK/AIR

DISP: Terminal Sacrifice

HISTO: 26273

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

\* Larynx

\* Lymph Node, Bronchial

\* Trachea

MISSING

\* Lymph Node, Mediastinal

OBSERVATIONS

Intestine Small, Ileum

Carcinoma

[ Carcinoma TGLS = 6-10 ]

Kidney

Nephropathy

Marked

[ Nephropathy TGLS = 7-11 ]

Liver

Degeneration

Cystic, Mild

Leukemia Mononuclear

[ Leukemia Mononuclear TGLS = 4-10 ]

\* Lung

Alveolar Epith

Hyperplasia

Atypical, Mild

[ Hyperplasia TGLS = 8-7 ]

Mesentery

Fat

Necrosis

Mild

[ Necrosis TGLS = 1-8 ]

\* Nose

Olfactory Epi

Degeneration

Hyaline, Minimal

Pituitary Gland

Pars Distalis

Adenoma

[ Adenoma TGLS = 2-9 ]

Skin

SOA, Subcut Tiss

Inflammation

Chronic, Minimal

SOA, Subcut Tiss

Sarcoma

Note: A small anaplastic sarcoma with many mitotic figures is present within one of the subcutaneous inflammatory nodules.

[ Inflammation TGLS = 5-6 ]

Spleen

Fibrosis

Moderate

Leukemia Mononuclear

[ Fibrosis TGLS = 9-9 ]

[ Leukemia Mononuclear TGLS = 3-9 ]

PRIMARY CAUSE OF DEATH

-

\* PROTOCOL REQUIRED TISSUE

**Experiment Number:** 88034-07

**Test Type:** CHRONIC

**Route:** SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY

**Species/Strain:** Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

**Test Compound:** Ozone/NNK

**CAS Number:** OZONNNKCOMB

**Date Report Requested:** 10/21/2014

**Time Report Requested:** 05:28:17

**First Dose M/F:** NA / NA

**Lab:** BNW

**ANIMAL ID:** 8238

**TRT#:** 2

**SEX:** Male

**DAY ON TEST:** 613

**DOSE:** .1MG/KG NNK/AIR

**DISP:** Moribund Sacrifice

**HISTO:** 26274

**ORGAN AND ACCOUNTABLE SITE STATUS**

**NORMAL**

\* Lung

\* Lymph Node, Bronchial

\* Trachea

**OBSERVATIONS**

Kidney [ Nephropathy TGLS = 3-8 ]		Nephropathy	Moderate
* Larynx		Inflammation	Suppurative, Minimal
Liver [ Vacuolization Cytoplasmic TGLS = 2-9 ]		Vacuolization Cytoplasmic	Mild
* Lymph Node, Mediastinal		Infiltration Cellular	Plasma Cell, Mild
* Nose	Olfactory Epi	Degeneration	Hyaline, Mild
Peritoneum [ Inflammation TGLS = 4-7 ]		Inflammation	Chronic, Minimal
Pituitary Gland [ Adenoma TGLS = 1-9 ]	Pars Distalis	Adenoma	
Skin [ Inflammation TGLS = 5-6 ]	SOA, Subcut Tiss	Inflammation	Chronic, Minimal

**PRIMARY CAUSE OF DEATH**

- Pituitary Gland Pars Distalis Adenoma

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 88034-07

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Date Report Requested: 10/21/2014

Test Type: CHRONIC

Test Compound: Ozone/NNK

Time Report Requested: 05:28:17

Route: SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY

CAS Number: OZONNNKCOMB

First Dose M/F: NA / NA

Species/Strain: Rat/F 344/N

Lab: BNW

ANIMAL ID: 8239

TRT#: 2

SEX: Male

DAY ON TEST: 639

DOSE: .1MG/KG NNK/AIR

DISP: Moribund Sacrifice

HISTO: 26275

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

\* Larynx

\* Lung

\* Trachea

MISSING

\* Lymph Node, Bronchial

\* Lymph Node, Mediastinal

OBSERVATIONS

Kidney		Nephropathy	Moderate
[ Nephropathy TGLS = 4-8 ]			
Liver		Vacuolization Cytoplasmic	Mild
Note: No microscopic lesion corresponding to TGL #7 (liver, median, focus, 1-2 mm. dia. multiple, dark) was observed.			
[ Vacuolization Cytoplasmic TGLS = 3-9 ]			
* Lung			
Note: No microscopic lesion corresponding to TGL #1 (lung, bilateral, pale mottled) was observed. Gross appearance probably due to incomplete blood drainage.			
* Nose	Olfactory Epi	Degeneration	Hyaline, Minimal
Peritoneum		Inflammation	Chronic, Minimal
[ Inflammation TGLS = 5-7 ]			
Pituitary Gland	Pars Distalis	Adenoma	
[ Adenoma TGLS = 2-9 ]			
Skin	SOA, Subcut Tiss	Inflammation	Chronic, Minimal
[ Inflammation TGLS = 6-6 ]			

PRIMARY CAUSE OF DEATH

- Pituitary Gland Pars Distalis Adenoma

\* PROTOCOL REQUIRED TISSUE

**Experiment Number:** 88034-07

**Test Type:** CHRONIC

**Route:** SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY

**Species/Strain:** Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

**Test Compound:** Ozone/NNK

**CAS Number:** OZONNNKCOMB

**Date Report Requested:** 10/21/2014

**Time Report Requested:** 05:28:17

**First Dose M/F:** NA / NA

**Lab:** BNW

**ANIMAL ID:** 8240

**TRT#:** 2

**SEX:** Male

**DAY ON TEST:** 736

**DOSE:** .1MG/KG NNK/AIR

**DISP:** Terminal Sacrifice

**HISTO:** 26276

**ORGAN AND ACCOUNTABLE SITE STATUS**

**NORMAL**

\* Larynx \* Trachea

**OBSERVATIONS**

Kidney [ Nephropathy TGLS = 4-10 ]		Nephropathy	Moderate
Liver [ Leukemia Mononuclear TGLS = 7-11 ]		Leukemia Mononuclear	
* Lung		Leukemia Mononuclear	
* Lymph Node, Bronchial		Leukemia Mononuclear	
* Lymph Node, Mediastinal		Leukemia Mononuclear	
Mammary Gland [ Hyperplasia TGLS = 1-8 ]		Hyperplasia	Moderate
* Nose	Olfactory Epi	Degeneration	Hyaline, Minimal
Peritoneum [ Inflammation TGLS = 5-6 ]		Inflammation	Chronic, Minimal
Pituitary Gland [ Adenoma TGLS = 2-9 ]	Pars Distalis	Adenoma	
Skin [ Inflammation TGLS = 6-7 ]	SOA, Subcut Tiss	Inflammation	Chronic, Minimal
Spleen [ Leukemia Mononuclear TGLS = 3-9 ]		Leukemia Mononuclear	

**PRIMARY CAUSE OF DEATH**

-

\* PROTOCOL REQUIRED TISSUE



Experiment Number: 88034-07

Test Type: CHRONIC

Route: SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY

Species/Strain: Rat/F 344/N

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Test Compound: Ozone/NNK

CAS Number: OZONNNKCOMB

Date Report Requested: 10/21/2014

Time Report Requested: 05:28:17

First Dose M/F: NA / NA

Lab: BNW

ANIMAL ID: 8241

TRT#: 2

SEX: Male

DAY ON TEST: 673

DOSE: .1MG/KG NNK/AIR

DISP: Moribund Sacrifice

HISTO: 26277

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

\* Larynx

\* Lung

\* Lymph Node, Mediastinal

\* Trachea

MISSING

\* Lymph Node, Bronchial

OBSERVATIONS

Islets, Pancreatic

Carcinoma

Note: TGL #7 involves the pancreatic islets rather than the pancreatic lymph node as described on the IANR form.

[ Carcinoma TGLS = 7-12 ]

Kidney

Nephropathy

Moderate

[ Nephropathy TGLS = 5-13 ]

Mesentery

Fat

Necrosis

Moderate

[ Necrosis TGLS = 8-11 ]

\* Nose

Olfactory Epi

Degeneration

Hyaline, Minimal

Oral Mucosa

Pharyngeal

Squamous Cell Papilloma

[ Squamous Cell Papilloma TGLS = 11-5 ]

Peritoneum

Inflammation

Chronic, Minimal

[ Inflammation TGLS = 9-8 ]

Pituitary Gland

Pars Distalis

Adenoma

[ Adenoma TGLS = 4-14 ]

Preputial Gland

Carcinoma

[ Carcinoma TGLS = 2-9 ]

Skin

Subcut Tiss

Fibroma

Hyperkeratosis

Moderate

SOA, Subcut Tiss

Inflammation

Chronic, Minimal

[ Fibroma TGLS = 3-10 ]

[ Hyperkeratosis TGLS = 1-6 ]

[ Inflammation TGLS = 10-7 ]

Spleen

Hematopoietic Cell Proliferation

Mild

[ Hematopoietic Cell Proliferation TGLS = 6-14 ]

PRIMARY CAUSE OF DEATH

- Preputial Gland Carcinoma

\* PROTOCOL REQUIRED TISSUE

**Experiment Number:** 88034-07

**Test Type:** CHRONIC

**Route:** SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY

**Species/Strain:** Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

**Test Compound:** Ozone/NNK

**CAS Number:** OZONNNKCOMB

**Date Report Requested:** 10/21/2014

**Time Report Requested:** 05:28:17

**First Dose M/F:** NA / NA

**Lab:** BNW

---

**ANIMAL ID:** 8241

**TRT#:** 2

**SEX:** Male

**DAY ON TEST:** 673

**DOSE:** .1MG/KG NNK/AIR

**DISP:** Moribund Sacrifice

**HISTO:** 26277

---

**ORGAN AND ACCOUNTABLE SITE STATUS**

---

CONTRIBUTORY CAUSE OF DEATH

- Pituitary Gland Pars Distalis Adenoma;Skin Subcut Tiss Fibroma

---

\* PROTOCOL REQUIRED TISSUE

**Experiment Number:** 88034-07

**Test Type:** CHRONIC

**Route:** SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY

**Species/Strain:** Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

**Test Compound:** Ozone/NNK

**CAS Number:** OZONNNKCOMB

**Date Report Requested:** 10/21/2014

**Time Report Requested:** 05:28:17

**First Dose M/F:** NA / NA

**Lab:** BNW

**ANIMAL ID:** 8242

**TRT#:** 2

**SEX:** Male

**DAY ON TEST:** 529

**DOSE:** .1MG/KG NNK/AIR

**DISP:** Moribund Sacrifice

**HISTO:** 26278

**ORGAN AND ACCOUNTABLE SITE STATUS**

**NORMAL**

\* Larynx

\* Lymph Node, Mediastinal

\* Trachea

**MISSING**

\* Lymph Node, Bronchial

**OBSERVATIONS**

\* Lung

[ Congestion TGLS = 1-3 ]

Congestion

Minimal

\* Nose

Olfactory Epi

Degeneration

Hyaline, Mild

Pituitary Gland

Pars Distalis

Adenoma

[ Adenoma TGLS = 2-7 ]

Skin

SOA, Subcut Tiss

Inflammation

Chronic, Minimal

[ Inflammation TGLS = 3-6 ]

**PRIMARY CAUSE OF DEATH**

- Pituitary Gland Pars Distalis Adenoma

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 88034-07

Test Type: CHRONIC

Route: SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY

Species/Strain: Rat/F 344/N

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Test Compound: Ozone/NNK

CAS Number: OZONNNKCOMB

Date Report Requested: 10/21/2014

Time Report Requested: 05:28:17

First Dose M/F: NA / NA

Lab: BNW

ANIMAL ID: 8243

TRT#: 2

SEX: Male

DAY ON TEST: 635

DOSE: .1MG/KG NNK/AIR

DISP: Moribund Sacrifice

HISTO: 26279

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

\* Larynx

\* Lymph Node, Mediastinal

\* Trachea

OBSERVATIONS

Liver

Leukemia Mononuclear  
Vacuolization Cytoplasmic

Moderate

[ Vacuolization Cytoplasmic TGLS = 6-9 ]

\* Lung

Leukemia Mononuclear

\* Lymph Node, Bronchial

Leukemia Mononuclear

\* Nose

Olfactory Epi

Degeneration

Hyaline, Mild

Penis

Inflammation

Chronic Active, Mild

[ Inflammation TGLS = 1-7 ]

Pituitary Gland

Pars Distalis

Adenoma

[ Adenoma TGLS = 3-8 ]

Prostate

Inflammation

Suppurative, Marked

[ Inflammation TGLS = 5-7 ]

Skin

SOA, Subcut Tiss

Inflammation

Chronic, Minimal

[ Inflammation TGLS = 7-6 ]

Spleen

Leukemia Mononuclear

[ Leukemia Mononuclear TGLS = 4-8 ]

PRIMARY CAUSE OF DEATH

- Spleen Leukemia Mononuclear

\* PROTOCOL REQUIRED TISSUE

**Experiment Number:** 88034-07

**Test Type:** CHRONIC

**Route:** SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY

**Species/Strain:** Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

**Test Compound:** Ozone/NNK

**CAS Number:** OZONNNKCOMB

**Date Report Requested:** 10/21/2014

**Time Report Requested:** 05:28:17

**First Dose M/F:** NA / NA

**Lab:** BNW

**ANIMAL ID:** 8244

**TRT#:** 2

**SEX:** Male

**DAY ON TEST:** 671

**DOSE:** .1MG/KG NNK/AIR

**DISP:** Moribund Sacrifice

**HISTO:** 26280

**ORGAN AND ACCOUNTABLE SITE STATUS**

**NORMAL**

\* Larynx

\* Trachea

**OBSERVATIONS**

Liver [ Necrosis TGLS = 3-8 ]	Centrilobular	Necrosis	Moderate
* Lung [ Inflammation TGLS = 2-3 ]	Interstitial	Inflammation	Chronic, Diffuse, Mild
* Lymph Node, Mediastinal		Hemorrhage	Moderate
* Nose	Olfactory Epi	Degeneration	Hyaline, Minimal
Peritoneum [ Inflammation TGLS = 5-6 ]		Inflammation	Chronic, Minimal
Skin [ Inflammation TGLS = 4-7 ]	SOA, Subcut Tiss	Inflammation	Chronic, Minimal
Tongue [ Squamous Cell Papilloma TGLS = 1-8 ]		Squamous Cell Papilloma	

**PRIMARY CAUSE OF DEATH**

- UNCERTAIN

Animal Note: Lesions in liver and lung suggest heart failure as the probable cause of death.

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 88034-07

Test Type: CHRONIC

Route: SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY

Species/Strain: Rat/F 344/N

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Test Compound: Ozone/NNK

CAS Number: OZONNNKCOMB

Date Report Requested: 10/21/2014

Time Report Requested: 05:28:17

First Dose M/F: NA / NA

Lab: BNW

ANIMAL ID: 8245

TRT#: 2

SEX: Male

DAY ON TEST: 641

DOSE: .1MG/KG NNK/AIR

DISP: Moribund Sacrifice

HISTO: 26281

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

* Larynx	* Lung	* Lymph Node, Bronchial	* Lymph Node, Mediastinal
* Trachea			

OBSERVATIONS

Liver		Angiectasis Leukemia Mononuclear	Mild
[ Angiectasis TGLS = 9-10 ] [ Leukemia Mononuclear TGLS = 8-10 ]			
Mesentery	Fat	Necrosis	Moderate
[ Necrosis TGLS = 5-7 ]			
* Nose	Olfactory Epi	Degeneration	Hyaline, Mild
Pituitary Gland	Pars Distalis	Adenoma	
[ Adenoma TGLS = 1-9 ]			
Skin	Subcut Tiss SOA, Subcut Tiss	Fibroma Inflammation	Chronic, Minimal
[ Fibroma TGLS = 2-8 ] [ Inflammation TGLS = 4-6 ]			
Spleen		Fibrosis Leukemia Mononuclear	Moderate
[ Fibrosis TGLS = 6,7-9 ] [ Leukemia Mononuclear TGLS = 3-9 ]			

PRIMARY CAUSE OF DEATH

- Skin Subcut Tiss Fibroma

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 88034-07

Test Type: CHRONIC

Route: SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY

Species/Strain: Rat/F 344/N

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Test Compound: Ozone/NNK

CAS Number: OZONNNKCOMB

Date Report Requested: 10/21/2014

Time Report Requested: 05:28:17

First Dose M/F: NA / NA

Lab: BNW

ANIMAL ID: 8246

TRT#: 2

SEX: Male

DAY ON TEST: 551

DOSE: .1MG/KG NNK/AIR

DISP: Moribund Sacrifice

HISTO: 26282

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

\* Larynx \* Trachea

OBSERVATIONS

Islets, Pancreatic		Carcinoma	
Note: TGL #10 is in the pancreas instead of the pancreatic lymph node as indicated on IANR form			
[ Carcinoma TGLS = 10-9 ]			
Liver		Leukemia Mononuclear	
[ Leukemia Mononuclear TGLS = 6,7-8+9 ]			
* Lung		Leukemia Mononuclear	
[ Leukemia Mononuclear TGLS = 2-3+7 ]			
Lymph Node	Renal	Leukemia Mononuclear	
[ Leukemia Mononuclear TGLS = 8-8 ]			
* Lymph Node, Bronchial		Leukemia Mononuclear	
Lymph Node, Mandibular		Leukemia Mononuclear	
[ Leukemia Mononuclear TGLS = 1-8 ]			
* Lymph Node, Mediastinal		Leukemia Mononuclear	
* Nose	Olfactory Epi	Degeneration	Hyaline, Mild
Pituitary Gland	Pars Distalis	Adenoma	
[ Adenoma TGLS = 3-8 ]			
Skin	SOA, Subcut Tiss	Inflammation	Chronic, Minimal
[ Inflammation TGLS = 9-6 ]			
Spleen		Leukemia Mononuclear	
[ Leukemia Mononuclear TGLS = 4,5-9 ]			

PRIMARY CAUSE OF DEATH - Spleen Leukemia Mononuclear

\* PROTOCOL REQUIRED TISSUE

**Experiment Number:** 88034-07

**Test Type:** CHRONIC

**Route:** SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY

**Species/Strain:** Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

**Test Compound:** Ozone/NNK

**CAS Number:** OZONNNKCOMB

**Date Report Requested:** 10/21/2014

**Time Report Requested:** 05:28:17

**First Dose M/F:** NA / NA

**Lab:** BNW

**ANIMAL ID:** 8247

**TRT#:** 2

**SEX:** Male

**DAY ON TEST:** 736

**DOSE:** .1MG/KG NNK/AIR

**DISP:** Terminal Sacrifice

**HISTO:** 26283

**ORGAN AND ACCOUNTABLE SITE STATUS**

**NORMAL**

\* Larynx

\* Lung

\* Lymph Node, Bronchial

\* Trachea

**MISSING**

\* Lymph Node, Mediastinal

**OBSERVATIONS**

Kidney [ Nephropathy TGLS = 5-10 ]		Nephropathy	Marked
* Nose	Olfactory Epi	Degeneration	Hyaline, Minimal
Skin [ Inflammation TGLS = 7-6 ] [ Keratoacanthoma TGLS = 1,6-8+7 ]	SOA, Subcut Tiss	Inflammation Keratoacanthoma	Chronic, Minimal Multiple
Spleen [ Fibrosis TGLS = 4-9 ]		Fibrosis	Moderate
Testes [ Adenoma TGLS = 2,3-9 ]	Interstit Cell	Adenoma	

**PRIMARY CAUSE OF DEATH**

-

\* PROTOCOL REQUIRED TISSUE



**Experiment Number:** 88034-07

**Test Type:** CHRONIC

**Route:** SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY

**Species/Strain:** Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

**Test Compound:** Ozone/NNK

**CAS Number:** OZONNNKCOMB

**Date Report Requested:** 10/21/2014

**Time Report Requested:** 05:28:17

**First Dose M/F:** NA / NA

**Lab:** BNW

**ANIMAL ID:** 8248

**TRT#:** 2

**SEX:** Male

**DAY ON TEST:** 550

**DOSE:** .1MG/KG NNK/AIR

**DISP:** Moribund Sacrifice

**HISTO:** 26284

**ORGAN AND ACCOUNTABLE SITE STATUS**

**NORMAL**

\* Larynx

\* Lymph Node, Bronchial

\* Trachea

**INSUFFICIENT TISSUE**

\* Lymph Node, Mediastinal

**OBSERVATIONS**

\* Lung

[ Congestion TGLS = 1-3 ]

Congestion

Minimal

\* Nose

Olfactory Epi

Degeneration

Hyaline, Minimal

Pituitary Gland

Pars Distalis

Adenoma

[ Adenoma TGLS = 2-7 ]

Skin

SOA, Subcut Tiss

Inflammation

Chronic, Minimal

[ Inflammation TGLS = 3-6 ]

**PRIMARY CAUSE OF DEATH**

- Pituitary Gland Pars Distalis Adenoma

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 88034-07

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Date Report Requested: 10/21/2014

Test Type: CHRONIC

Test Compound: Ozone/NNK

Time Report Requested: 05:28:17

Route: SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY

CAS Number: OZONNNKCOMB

First Dose M/F: NA / NA

Species/Strain: Rat/F 344/N

Lab: BNW

ANIMAL ID: 8401

TRT#: 3

SEX: Male

DAY ON TEST: 562

DOSE: 1 MG/KG NNK/AIR

DISP: Moribund Sacrifice

HISTO: 26285

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

\* Larynx

Preputial Gland

\* Trachea

MISSING

\* Lymph Node, Mediastinal

OBSERVATIONS

Intestine Small, Jejunum

Leukemia Mononuclear

[ Leukemia Mononuclear TGLS = 12-11 ]

Kidney

Leukemia Mononuclear

Nephropathy

Moderate

[ Leukemia Mononuclear TGLS = 5,6,7-9 ]

Liver

Leukemia Mononuclear

[ Leukemia Mononuclear TGLS = 4-8 ]

\* Lung

Alveolar Epith

Hyperplasia

Atypical, Minimal

Leukemia Mononuclear

[ Leukemia Mononuclear TGLS = 13-7 ]

\* Lym Node Media

Note: Mediastinal lymph node could not be identified because of massive involvement of thymus and mediastinal tissue with mononuclear leukemia.

Lymph Node

Pancreatic

Leukemia Mononuclear

Renal

Leukemia Mononuclear

[ Leukemia Mononuclear TGLS = 11-8 ]

[ Leukemia Mononuclear TGLS = 10-10 ]

\* Lymph Node, Bronchial

Leukemia Mononuclear

Lymph Node, Mandibular

Leukemia Mononuclear

[ Leukemia Mononuclear TGLS = 2-8 ]

\* Nose

Olfactory Epi

Degeneration

Hyaline, Minimal

Lateral Wall

Hyperplasia

Minimal

Preputial GI

Note: TGL #1 is due to ductal ectasia and filling with secretory material in preputial gland. NCL was entered on IANR since morphology is within normal limits.

Skin

SOA, Subcut Tiss

Inflammation

Chronic, Minimal

[ Inflammation TGLS = 14-6 ]

\* PROTOCOL REQUIRED TISSUE

**Experiment Number:** 88034-07

**Test Type:** CHRONIC

**Route:** SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY

**Species/Strain:** Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

**Test Compound:** Ozone/NNK

**CAS Number:** OZONNNKCOMB

**Date Report Requested:** 10/21/2014

**Time Report Requested:** 05:28:17

**First Dose M/F:** NA / NA

**Lab:** BNW

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**ANIMAL ID:** 8401

**TRT#:** 3

**SEX:** Male

**DAY ON TEST:** 562

**DOSE:** 1 MG/KG NNK/AIR

**DISP:** Moribund Sacrifice

**HISTO:** 26285

---

**ORGAN AND ACCOUNTABLE SITE STATUS**

Spleen  
[ Leukemia Mononuclear TGLS = 8,9-10 ]

Leukemia Mononuclear

Thymus  
[ Leukemia Mononuclear TGLS = 3-2 ]

Leukemia Mononuclear

---

**PRIMARY CAUSE OF DEATH** - Spleen Leukemia Mononuclear

---

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 88034-07

Test Type: CHRONIC

Route: SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY

Species/Strain: Rat/F 344/N

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Test Compound: Ozone/NNK

CAS Number: OZONNNKCOMB

Date Report Requested: 10/21/2014

Time Report Requested: 05:28:17

First Dose M/F: NA / NA

Lab: BNW

ANIMAL ID: 8402

TRT#: 3

SEX: Male

DAY ON TEST: 551

DOSE: 1 MG/KG NNK/AIR

DISP: Moribund Sacrifice

HISTO: 26286

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

* Larynx	* Lymph Node, Bronchial	* Lymph Node, Mediastinal	Preputial Gland
* Trachea			

OBSERVATIONS

Kidney		Nephropathy	Mild
[ Nephropathy TGLS = 9-9 ]			
Liver		Leukemia Mononuclear	
[ Leukemia Mononuclear TGLS = 8-9 ]			
* Lung	Alveolar Epith	Alveolar/Bronchiolar Adenoma Hyperplasia Sarcoma	Multiple Atypical, Minimal Metastatic (Skin)
[ Alveolar/Bronchiolar Adenoma TGLS = 1-7 ]			
Mesentery	Fat	Necrosis	Minimal
[ Necrosis TGLS = 4-8 ]			
* Nose	Olfactory Epi	Degeneration	Hyaline, Minimal
Peritoneum		Inflammation	Chronic, Minimal
[ Inflammation TGLS = 5-8 ]			
Pituitary Gland	Pars Distalis	Adenoma	
[ Adenoma TGLS = 2-8 ]			
Preputial GI			
Note: The duct of one preputial gland is dilated and filled with secretion. Since this was considered within normal limits, NCL was entered on IANR form for TGL #3.			
Skin	SOA, Subcut Tiss	Inflammation	Chronic, Minimal
	SOA, Subcut Tiss	Sarcoma	
[ Inflammation TGLS = 6-6 ]			
[ Sarcoma TGLS = 7-11+12+13 ]			

PRIMARY CAUSE OF DEATH

- Skin SOA Subcut Tiss Sarcoma

CONTRIBUTORY CAUSE OF DEATH

- Pituitary Gland Pars Distalis Adenoma

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 88034-07

Test Type: CHRONIC

Route: SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY

Species/Strain: Rat/F 344/N

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Test Compound: Ozone/NNK

CAS Number: OZONNNKCOMB

Date Report Requested: 10/21/2014

Time Report Requested: 05:28:17

First Dose M/F: NA / NA

Lab: BNW

ANIMAL ID: 8403

TRT#: 3

SEX: Male

DAY ON TEST: 603

DOSE: 1 MG/KG NNK/AIR

DISP: Moribund Sacrifice

HISTO: 26287

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

\* Larynx

Stomach, Glandular

\* Trachea

OBSERVATIONS

Intestine Large, Colon [ Hyperplasia TGLS = 8-10 ]	Lymphoid Tiss	Hyperplasia	Lymphoid, Mild
Intestine Small, Ileum [ Hyperplasia TGLS = 7-9 ]		Hyperplasia	Lymphoid, Mild
Liver [ Leukemia Mononuclear TGLS = 6-9 ]		Leukemia Mononuclear	
* Lung [ Leukemia Mononuclear TGLS = 2-3 ]		Leukemia Mononuclear	
Lymph Node [ Leukemia Mononuclear TGLS = 3-8 ] [ Leukemia Mononuclear TGLS = 9-9 ]	Deep Cervical Renal	Leukemia Mononuclear Leukemia Mononuclear	
* Lymph Node, Bronchial		Leukemia Mononuclear	
Lymph Node, Mandibular [ Leukemia Mononuclear TGLS = 1-7 ]		Leukemia Mononuclear	
* Lymph Node, Mediastinal		Leukemia Mononuclear	
* Nose	Olfactory Epi Lateral Wall	Degeneration Hyperplasia Inflammation Leukemia Mononuclear	Hyaline, Minimal Mild Suppurative, Moderate
Penis [ Inflammation TGLS = 4-11 ]		Inflammation	Chronic Active, Mild
Peritoneum [ Inflammation TGLS = 11-10 ]		Inflammation	Chronic, Minimal
Skin [ Inflammation TGLS = 12-6 ]	SOA, Subcut Tiss	Inflammation	Chronic, Minimal
Spleen		Leukemia Mononuclear	

\* PROTOCOL REQUIRED TISSUE

**Experiment Number:** 88034-07

**Test Type:** CHRONIC

**Route:** SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY

**Species/Strain:** Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

**Test Compound:** Ozone/NNK

**CAS Number:** OZONNNKCOMB

**Date Report Requested:** 10/21/2014

**Time Report Requested:** 05:28:17

**First Dose M/F:** NA / NA

**Lab:** BNW

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**ANIMAL ID:** 8403

**TRT#:** 3

**SEX:** Male

**DAY ON TEST:** 603

**DOSE:** 1 MG/KG NNK/AIR

**DISP:** Moribund Sacrifice

**HISTO:** 26287

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**ORGAN AND ACCOUNTABLE SITE STATUS**

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[ Leukemia Mononuclear TGLS = 5-8 ]

Stom Gland

Note: No histologic finding corresponding to TGL 10 (stomach, glandular, nodule, 5 mm dia.) was observed in the stomach section on slide 9.

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**PRIMARY CAUSE OF DEATH**

- Spleen Leukemia Mononuclear

---

\* PROTOCOL REQUIRED TISSUE

**Experiment Number:** 88034-07

**Test Type:** CHRONIC

**Route:** SUBCUTANEOUS|RESPIRATORY  
**EXPOSURE WHOLE BODY**

**Species/Strain:** Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

**Test Compound:** Ozone/NNK

**CAS Number:** OZONNNKCOMB

**Date Report Requested:** 10/21/2014

**Time Report Requested:** 05:28:17

**First Dose M/F:** NA / NA

**Lab:** BNW

**ANIMAL ID:** 8404

**TRT#:** 3

**SEX:** Male

**DAY ON TEST:** 678

**DOSE:** 1 MG/KG NNK/AIR

**DISP:** Moribund Sacrifice

**HISTO:** 26288

**ORGAN AND ACCOUNTABLE SITE STATUS**

**NORMAL**

\* Larynx

\* Trachea

**OBSERVATIONS**

Liver		Leukemia Mononuclear	
[ Leukemia Mononuclear TGLS = 8-13 ]			
* Lung	Alveolar Epith	Alveolar/Bronchiolar Carcinoma	Atypical, Mild
		Hyperplasia	
		Leukemia Mononuclear	
[ Alveolar/Bronchiolar Carcinoma TGLS = 3-3 ]			
[ Leukemia Mononuclear TGLS = 13,14-3 ]			
Lymph Node	Deep Cervical Iliac	Leukemia Mononuclear	
		Leukemia Mononuclear	
[ Leukemia Mononuclear TGLS = 10-11 ]			
[ Leukemia Mononuclear TGLS = 4-9 ]			
* Lymph Node, Bronchial		Leukemia Mononuclear	
Lymph Node, Mandibular		Leukemia Mononuclear	
[ Leukemia Mononuclear TGLS = 2-8 ]			
* Lymph Node, Mediastinal		Leukemia Mononuclear	
Lymph Node, Mesenteric		Leukemia Mononuclear	
[ Leukemia Mononuclear TGLS = 7-10 ]			
* Nose	Olfactory Epi	Degeneration	Hyaline, Minimal
		Leukemia Mononuclear	
Peritoneum		Inflammation	Chronic, Minimal
[ Inflammation TGLS = 9-6 ]			
Pituitary Gland	Pars Distalis	Adenoma	
[ Adenoma TGLS = 5-12 ]			
Skin	SOA, Subcut Tiss	Inflammation	Chronic, Minimal
	SOA, Subcut Tiss	Inflammation	Chronic, Marked
		Keratoacanthoma	
[ Inflammation TGLS = 12-15 ]			

\* PROTOCOL REQUIRED TISSUE

**Experiment Number:** 88034-07

**Test Type:** CHRONIC

**Route:** SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY

**Species/Strain:** Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

**Test Compound:** Ozone/NNK

**CAS Number:** OZONNNKCOMB

**Date Report Requested:** 10/21/2014

**Time Report Requested:** 05:28:17

**First Dose M/F:** NA / NA

**Lab:** BNW

---

**ANIMAL ID:** 8404

**TRT#:** 3

**SEX:** Male

**DAY ON TEST:** 678

**DOSE:** 1 MG/KG NNK/AIR

**DISP:** Moribund Sacrifice

**HISTO:** 26288

---

**ORGAN AND ACCOUNTABLE SITE STATUS**

---

[ Inflammation TGLS = 11-7 ]

[ Keratoacanthoma TGLS = 1-14 ]

Spleen

Leukemia Mononuclear

[ Leukemia Mononuclear TGLS = 6-12 ]

Testes

Interstit Cell

Adenoma

[ Adenoma TGLS = 15-13 ]

---

**PRIMARY CAUSE OF DEATH**

- Spleen Leukemia Mononuclear

---

\* PROTOCOL REQUIRED TISSUE



Experiment Number: 88034-07

Test Type: CHRONIC

Route: SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY

Species/Strain: Rat/F 344/N

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Test Compound: Ozone/NNK

CAS Number: OZONNNKCOMB

Date Report Requested: 10/21/2014

Time Report Requested: 05:28:17

First Dose M/F: NA / NA

Lab: BNW

ANIMAL ID: 8405

TRT#: 3

SEX: Male

DAY ON TEST: 736

DOSE: 1 MG/KG NNK/AIR

DISP: Terminal Sacrifice

HISTO: 26289

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

\* Larynx \* Trachea

MISSING

\* Lymph Node, Bronchial

OBSERVATIONS

Kidney		Nephropathy	Moderate
[ Nephropathy TGLS = 7-7 ]			
Liver		Leukemia Mononuclear	
[ Leukemia Mononuclear TGLS = 11-9 ]			
* Lung	Alveolar Epith	Alveolar/Bronchiolar Adenoma Hyperplasia	Multiple Atypical, Marked
[ Alveolar/Bronchiolar Adenoma TGLS = 3-3 ]			
Lymph Node	Pancreatic	Leukemia Mononuclear	
[ Leukemia Mononuclear TGLS = 10-9 ]			
* Lymph Node, Mediastinal		Leukemia Mononuclear	
[ Leukemia Mononuclear TGLS = 4-2 ]			
Mammary Gland		Galactocele	Mild
[ Galactocele TGLS = 1-10 ]			
* Nose	Olfactory Epi Pars Distalis	Degeneration Adenoma	Hyaline, Minimal
Pituitary Gland			
[ Adenoma TGLS = 6-8 ]			
Preputial Gland		Inflammation	Chronic Active, Mild
[ Inflammation TGLS = 5-11 ]			
Skin	SOA, Subcut Tiss	Inflammation	Chronic, Minimal
[ Inflammation TGLS = 12-6 ]			
Spleen		Fibrosis Leukemia Mononuclear	Moderate
[ Fibrosis TGLS = 9-8 ]			
[ Leukemia Mononuclear TGLS = 8-8 ]			

PRIMARY CAUSE OF DEATH

-

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 88034-07

Test Type: CHRONIC

Route: SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY

Species/Strain: Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

Test Compound: Ozone/NNK

CAS Number: OZONNNKCOMB

Date Report Requested: 10/21/2014

Time Report Requested: 05:28:17

First Dose M/F: NA / NA

Lab: BNW

ANIMAL ID: 8406

TRT#: 3

SEX: Male

DAY ON TEST: 683

DOSE: 1 MG/KG NNK/AIR

DISP: Moribund Sacrifice

HISTO: 26290

**ORGAN AND ACCOUNTABLE SITE STATUS**

**NORMAL**

\* Larynx \* Trachea

**MISSING**

\* Lymph Node, Bronchial

**OBSERVATIONS**

Kidney		Leukemia Mononuclear Nephropathy	Moderate
[ Nephropathy TGLS = 8-9 ]			
Liver		Leukemia Mononuclear	
[ Leukemia Mononuclear TGLS = 7-8 ]			
* Lung	Alveolar Epith	Hyperplasia Leukemia Mononuclear	Atypical, Moderate
[ Hyperplasia TGLS = 5-3 ]			
Lymph Node	Renal	Leukemia Mononuclear	
[ Leukemia Mononuclear TGLS = 12-10 ]			
Lymph Node, Mandibular		Leukemia Mononuclear	
[ Leukemia Mononuclear TGLS = 3-8 ]			
* Lymph Node, Mediastinal		Leukemia Mononuclear	
[ Leukemia Mononuclear TGLS = 4-2 ]			
* Nose	Olfactory Epi	Degeneration Inflammation	Hyaline, Minimal Chronic, Minimal
Peritoneum			
[ Inflammation TGLS = 11-7 ]			
Pituitary Gland	Pars Distalis	Adenoma	
[ Adenoma TGLS = 6-8 ]			
Skin	SOA, Subcut Tiss	Inflammation	Chronic, Minimal
[ Inflammation TGLS = 13-6 ]			
Spleen		Fibrosis Leukemia Mononuclear	Moderate
[ Fibrosis TGLS = 10-10 ]			
[ Leukemia Mononuclear TGLS = 9-10 ]			

\* PROTOCOL REQUIRED TISSUE

**Experiment Number:** 88034-07

**Test Type:** CHRONIC

**Route:** SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY

**Species/Strain:** Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

**Test Compound:** Ozone/NNK

**CAS Number:** OZONNNKCOMB

**Date Report Requested:** 10/21/2014

**Time Report Requested:** 05:28:17

**First Dose M/F:** NA / NA

**Lab:** BNW

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**ANIMAL ID:** 8406

**TRT#:** 3

**SEX:** Male

**DAY ON TEST:** 683

**DOSE:** 1 MG/KG NNK/AIR

**DISP:** Moribund Sacrifice

**HISTO:** 26290

---

**ORGAN AND ACCOUNTABLE SITE STATUS**

---

PRIMARY CAUSE OF DEATH

- Spleen Leukemia Mononuclear

---

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 88034-07

Test Type: CHRONIC

Route: SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY

Species/Strain: Rat/F 344/N

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Test Compound: Ozone/NNK

CAS Number: OZONNNKCOMB

Date Report Requested: 10/21/2014

Time Report Requested: 05:28:17

First Dose M/F: NA / NA

Lab: BNW

ANIMAL ID: 8407

TRT#: 3

SEX: Male

DAY ON TEST: 663

DOSE: 1 MG/KG NNK/AIR

DISP: Moribund Sacrifice

HISTO: 26291

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

\* Larynx

\* Trachea

MISSING

\* Lymph Node, Bronchial

OBSERVATIONS

Kidney		Nephropathy	Marked
[ Nephropathy TGLS = 4-11 ]			
Liver		Degeneration	Cystic, Mild
[ Degeneration TGLS = 5-12 ]			
* Lung		Alveolar/Bronchiolar Adenoma	Multiple
	Alveolar Epith	Hyperplasia	Atypical, Mild
[ Alveolar/Bronchiolar Adenoma TGLS = 8-9+3 ]			
* Lymph Node, Mediastinal		Hemorrhage	Moderate
* Nose	Olfactory Epi	Degeneration	Hyaline, Minimal
Peritoneum		Inflammation	Chronic, Minimal
[ Inflammation TGLS = 6-6 ]			
Pituitary Gland	Pars Distalis	Adenoma	
[ Adenoma TGLS = 2-10 ]			
Skin	SOA, Subcut Tiss	Inflammation	Chronic, Minimal
[ Inflammation TGLS = 7-7 ]			
Testes		Atrophy	Moderate
[ Atrophy TGLS = 3-10 ]			
Thyroid Gland	C Cell	Carcinoma	
[ Carcinoma TGLS = 1-8 ]			

PRIMARY CAUSE OF DEATH

- Pituitary Gland Pars Distalis Adenoma

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 88034-07

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Date Report Requested: 10/21/2014

Test Type: CHRONIC

Test Compound: Ozone/NNK

Time Report Requested: 05:28:17

Route: SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY

CAS Number: OZONNNKCOMB

First Dose M/F: NA / NA

Species/Strain: Rat/F 344/N

Lab: BNW

ANIMAL ID: 8408

TRT#: 3

SEX: Male

DAY ON TEST: 528

DOSE: 1 MG/KG NNK/AIR

DISP: Moribund Sacrifice

HISTO: 26292

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

\* Larynx

\* Lymph Node, Mediastinal

\* Trachea

MISSING

\* Lymph Node, Bronchial

OBSERVATIONS

Liver  
[ Leukemia Mononuclear TGLS = 6-7 ]  
Leukemia Mononuclear

\* Lung  
Alveolar Epith  
Hyperplasia  
Atypical, Minimal  
Lymph Node  
Renal  
Infiltration Cellular  
Plasma Cell, Minimal  
Pancreatic  
Inflammation  
Granulomatous, Mild

Note: TGL # 5 involves pancreatic lymph node, not pancreas.

[ Infiltration Cellular TGLS = 7-9 ]

[ Inflammation TGLS = 5-7 ]

Mammary Gland  
[ Galactocele TGLS = 2-10 ]  
Galactocele  
Moderate

\* Nose  
Olfactory Epi  
Degeneration  
Hyaline, Minimal  
Peritoneum  
Inflammation  
Chronic, Minimal  
[ Inflammation TGLS = 8-8 ]

Pituitary Gland  
[ Adenoma TGLS = 3-9 ]  
Pars Distalis  
Adenoma

Skin  
SOA, Subcut Tiss  
SOA, Subcut Tiss  
Inflammation  
Sarcoma  
Ulcer  
Chronic, Minimal  
Mild

[ Inflammation TGLS = 9-6 ]

[ Sarcoma TGLS = 10-12 ]

[ Ulcer TGLS = 1-11 ]

Spleen  
[ Leukemia Mononuclear TGLS = 4-7 ]  
Leukemia Mononuclear

PRIMARY CAUSE OF DEATH - Spleen Leukemia Mononuclear

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 88034-07

Test Type: CHRONIC

Route: SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY

Species/Strain: Rat/F 344/N

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Test Compound: Ozone/NNK

CAS Number: OZONNNKCOMB

Date Report Requested: 10/21/2014

Time Report Requested: 05:28:17

First Dose M/F: NA / NA

Lab: BNW

ANIMAL ID: 8409

TRT#: 3

SEX: Male

DAY ON TEST: 736

DOSE: 1 MG/KG NNK/AIR

DISP: Terminal Sacrifice

HISTO: 26293

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

\* Larynx \* Trachea

MISSING

\* Lymph Node, Bronchial

OBSERVATIONS

Liver		Degeneration Leukemia Mononuclear	Cystic, Moderate
[ Degeneration TGLS = 2-10 ]			
* Lung		Alveolar/Bronchiolar Adenoma Alveolar/Bronchiolar Carcinoma Hyperplasia	Atypical, Mild
	Alveolar Epith		
Note: The alveolar/bronchiolar adenoma and multifocal areas of atypical hyperplasia also account for the multiple foci described as TGL #6.			
	[ Alveolar/Bronchiolar Carcinoma TGLS = 6-3 ]		
* Lymph Node, Mediastinal		Fibrosis	Moderate
* Nose	Olfactory Epi	Degeneration	Hyaline, Minimal
Peritoneum		Inflammation	Chronic, Minimal
[ Inflammation TGLS = 4-7 ]			
Skin	SOA, Subcut Tiss	Inflammation Inflammation	Chronic, Minimal Suppurative, Moderate
[ Inflammation TGLS = 5-8 ]			
[ Inflammation TGLS = 1-6 ]			
Spleen		Leukemia Mononuclear	
[ Leukemia Mononuclear TGLS = 3-9 ]			

PRIMARY CAUSE OF DEATH

-

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 88034-07

Test Type: CHRONIC

Route: SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY

Species/Strain: Rat/F 344/N

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Test Compound: Ozone/NNK

CAS Number: OZONNNKCOMB

Date Report Requested: 10/21/2014

Time Report Requested: 05:28:17

First Dose M/F: NA / NA

Lab: BNW

ANIMAL ID: 8410

TRT#: 3

SEX: Male

DAY ON TEST: 715

DOSE: 1 MG/KG NNK/AIR

DISP: Moribund Sacrifice

HISTO: 26294

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

Adrenal Cortex

\* Larynx

\* Lymph Node, Mediastinal

\* Trachea

MISSING

\* Lymph Node, Bronchial

OBSERVATIONS

Kidney [ Nephropathy TGLS = 5-9 ]		Nephropathy	Marked
Liver [ Degeneration TGLS = 4-9 ]		Degeneration Leukemia Mononuclear	Cystic, Mild
* Lung Alveolar Epith [ Alveolar/Bronchiolar Carcinoma TGLS = 7-7 ] [ Hyperplasia TGLS = 6,8-7 ]		Alveolar/Bronchiolar Adenoma Alveolar/Bronchiolar Carcinoma Hyperplasia	Multiple Atypical, Moderate
Mesentery [ Necrosis TGLS = 2-9 ]	Fat	Necrosis	Moderate
* Nose Pituitary Gland [ Adenoma TGLS = 1-8 ]	Olfactory Epi Pars Distalis	Degeneration Adenoma	Hyaline, Minimal
Skin [ Inflammation TGLS = 9-6 ] [ Inflammation TGLS = 10-8 ] [ Sarcoma TGLS = 11-10 ]	SOA, Subcut Tiss  SOA, Subcut Tiss	Inflammation Inflammation Sarcoma	Chronic, Minimal Chronic, Mild
Spleen [ Accessory Spleen TGLS = 12-10 ] [ Leukemia Mononuclear TGLS = 3-8 ]		Accessory Spleen Leukemia Mononuclear	

\* PROTOCOL REQUIRED TISSUE

**Experiment Number:** 88034-07

**Test Type:** CHRONIC

**Route:** SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY

**Species/Strain:** Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

**Test Compound:** Ozone/NNK

**CAS Number:** OZONNNKCOMB

**Date Report Requested:** 10/21/2014

**Time Report Requested:** 05:28:17

**First Dose M/F:** NA / NA

**Lab:** BNW

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**ANIMAL ID:** 8410

**TRT#:** 3

**SEX:** Male

**DAY ON TEST:** 715

**DOSE:** 1 MG/KG NNK/AIR

**DISP:** Moribund Sacrifice

**HISTO:** 26294

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**ORGAN AND ACCOUNTABLE SITE STATUS**

---

**PRIMARY CAUSE OF DEATH**

- Pituitary Gland Pars Distalis Adenoma

---

\* PROTOCOL REQUIRED TISSUE



**Experiment Number:** 88034-07

**Test Type:** CHRONIC

**Route:** SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY

**Species/Strain:** Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

**Test Compound:** Ozone/NNK

**CAS Number:** OZONNNKCOMB

**Date Report Requested:** 10/21/2014

**Time Report Requested:** 05:28:17

**First Dose M/F:** NA / NA

**Lab:** BNW

**ANIMAL ID:** 8411

**TRT#:** 3

**SEX:** Male

**DAY ON TEST:** 529

**DOSE:** 1 MG/KG NNK/AIR

**DISP:** Moribund Sacrifice

**HISTO:** 26295

**ORGAN AND ACCOUNTABLE SITE STATUS**

**NORMAL**

\* Larynx

\* Lymph Node, Bronchial

\* Trachea

**OBSERVATIONS**

\* Lung

[ Congestion TGLS = 3-3 ]

Congestion

Minimal

Lymph Node, Mandibular

[ Infiltration Cellular TGLS = 2-7 ]

Infiltration Cellular

Plasma Cell, Moderate

\* Lymph Node, Mediastinal

Infiltration Cellular

Plasma Cell, Moderate

\* Nose

Olfactory Epi

Degeneration

Hyaline, Minimal

Pituitary Gland

Pars Distalis

Adenoma

[ Adenoma TGLS = 4-7 ]

Preputial Gland

[ Inflammation TGLS = 1-8 ]

Inflammation

Chronic Active, Marked

Skin

[ Inflammation TGLS = 6-6 ]

SOA, Subcut Tiss

Inflammation

Chronic, Minimal

Spleen

[ Hematopoietic Cell Proliferation TGLS = 5-7 ]

Hematopoietic Cell Proliferation

Mild

PRIMARY CAUSE OF DEATH

- Preputial Gland Inflammation

CONTRIBUTORY CAUSE OF DEATH

- Pituitary Gland Pars Distalis Adenoma

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 88034-07

Test Type: CHRONIC

Route: SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY

Species/Strain: Rat/F 344/N

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Test Compound: Ozone/NNK

CAS Number: OZONNNKCOMB

Date Report Requested: 10/21/2014

Time Report Requested: 05:28:17

First Dose M/F: NA / NA

Lab: BNW

ANIMAL ID: 8412

TRT#: 3

SEX: Male

DAY ON TEST: 617

DOSE: 1 MG/KG NNK/AIR

DISP: Moribund Sacrifice

HISTO: 26296

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

\* Larynx

\* Lymph Node, Bronchial

\* Trachea

OBSERVATIONS

Liver

Hyperplasia  
Leukemia Mononuclear

Focal, Marked

[ Hyperplasia TGLS = 8-11 ]

\* Lung

Alveolar Epith

Alveolar/Bronchiolar Adenoma  
Hyperplasia

Atypical, Mild

[ Alveolar/Bronchiolar Adenoma TGLS = 7-9 ]

\* Lymph Node, Mediastinal

Leukemia Mononuclear

\* Nose

Olfactory Epi

Degeneration  
Inflammation

Hyaline, Mild  
Chronic, Minimal

Peritoneum

[ Inflammation TGLS = 3-8 ]

Pituitary Gland

Pars Distalis

Adenoma

[ Adenoma TGLS = 1-10 ]

Skin

SOA, Subcut Tiss

Hyperkeratosis  
Inflammation

Mild  
Chronic, Minimal

[ Hyperkeratosis TGLS = 6-6 ]

[ Inflammation TGLS = 4-7 ]

Spleen

Leukemia Mononuclear

[ Leukemia Mononuclear TGLS = 2-10 ]

PRIMARY CAUSE OF DEATH

- Pituitary Gland Pars Distalis Adenoma

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 88034-07

Test Type: CHRONIC

Route: SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY

Species/Strain: Rat/F 344/N

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Test Compound: Ozone/NNK

CAS Number: OZONNNKCOMB

Date Report Requested: 10/21/2014

Time Report Requested: 05:28:17

First Dose M/F: NA / NA

Lab: BNW

ANIMAL ID: 8413

TRT#: 3

SEX: Male

DAY ON TEST: 639

DOSE: 1 MG/KG NNK/AIR

DISP: Moribund Sacrifice

HISTO: 26297

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

\* Larynx

Penis

\* Trachea

MISSING

\* Lymph Node, Bronchial

OBSERVATIONS

Liver		Necrosis	Focal, Mild
[ Necrosis TGLS = 6-11 ]			
* Lung	Alveolar Epith	Hyperplasia	Atypical, Mild
[ Hyperplasia TGLS = 2-3 ]			
Lymph Node, Mandibular		Necrosis	Marked
[ Necrosis TGLS = 1-11 ]			
* Lymph Node, Mediastinal		Necrosis	Marked
* Nose	Olfactory Epi	Degeneration	Hyaline, Minimal
Penis			
Note: No microscopic lesion corresponding to TGL #9 (penis, distended, 1.2x0.4 cm) was observed. The gross change may have been due to edema.			
Peritoneum		Inflammation	Chronic, Minimal
[ Inflammation TGLS = 7-6 ]			
Pituitary Gland	Pars Distalis	Adenoma	
[ Adenoma TGLS = 11-10 ]			
Preputial Gland		Inflammation	Chronic Active, Mild
[ Inflammation TGLS = 10-9 ]			
Skin	Prepuce	Inflammation	Suppurative, Mild
	SOA, Subcut Tiss	Inflammation	Chronic, Minimal
[ Inflammation TGLS = 3-8 ]			
[ Inflammation TGLS = 8-7 ]			
Spleen		Atrophy	Moderate
[ Atrophy TGLS = 5-11 ]			
Testes	Interstit Cell	Adenoma	
[ Adenoma TGLS = 4-10 ]			

PRIMARY CAUSE OF DEATH

- UNCERTAIN

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 88034-07

Test Type: CHRONIC

Route: SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY

Species/Strain: Rat/F 344/N

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Test Compound: Ozone/NNK

CAS Number: OZONNNKCOMB

Date Report Requested: 10/21/2014

Time Report Requested: 05:28:17

First Dose M/F: NA / NA

Lab: BNW

ANIMAL ID: 8414

TRT#: 3

SEX: Male

DAY ON TEST: 661

DOSE: 1 MG/KG NNK/AIR

DISP: Moribund Sacrifice

HISTO: 26298

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

Adrenal Cortex

\* Larynx

Penis

\* Trachea

OBSERVATIONS

Kidney

Nephropathy

Moderate

[ Nephropathy TGLS = 10-11 ]

Liver

Leukemia Mononuclear

[ Leukemia Mononuclear TGLS = 8-9 ]

\* Lung

Alveolar Epith

Alveolar/Bronchiolar Carcinoma  
Hyperplasia  
Leukemia Mononuclear

Atypical, Moderate

Note: Extensive fibrosis, hematoidin pigment, and hemoglobin crystals are present in TGL #4 in addition to atypical epithelial hyperplasia.

Note: Two nodules were included as TGL #5. One is an alveolar/bronchiolar carcinoma; the other is a focal area of atypical alveolar epithelial hyperplasia.

[ Alveolar/Bronchiolar Carcinoma TGLS = 5-14 ]

[ Hyperplasia TGLS = 4-8 ]

Lymph Node

Pancreatic  
Renal

Leukemia Mononuclear  
Leukemia Mononuclear

[ Leukemia Mononuclear TGLS = 11-12 ]

[ Leukemia Mononuclear TGLS = 13-13 ]

\* Lymph Node, Bronchial

Leukemia Mononuclear

Note: TGL #3 is apparently the bronchial lymph node enlarged due to leukemic infiltrate since no lesion was observed in original or recut of the apical lobe of lung.

[ Leukemia Mononuclear TGLS = 3-3 ]

Lymph Node, Mandibular

Leukemia Mononuclear

[ Leukemia Mononuclear TGLS = 2-9 ]

\* Lymph Node, Mediastinal

Leukemia Mononuclear

[ Leukemia Mononuclear TGLS = 6-2 ]

Lymph Node, Mesenteric

Leukemia Mononuclear

[ Leukemia Mononuclear TGLS = 12-9 ]

\* Nose

Olfactory Epi  
Goblet Cell, Lateral Wall

Degeneration  
Hyperplasia  
Inflammation

Hyaline, Minimal  
Mild  
Suppurative, Moderate

\* PROTOCOL REQUIRED TISSUE

**Experiment Number:** 88034-07

**Test Type:** CHRONIC

**Route:** SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY

**Species/Strain:** Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

**Test Compound:** Ozone/NNK

**CAS Number:** OZONNNKCOMB

**Date Report Requested:** 10/21/2014

**Time Report Requested:** 05:28:17

**First Dose M/F:** NA / NA

**Lab:** BNW

**ANIMAL ID:** 8414

**TRT#:** 3

**SEX:** Male

**DAY ON TEST:** 661

**DOSE:** 1 MG/KG NNK/AIR

**DISP:** Moribund Sacrifice

**HISTO:** 26298

**ORGAN AND ACCOUNTABLE SITE STATUS**

Penis

Note: No microscopic lesion corresponding to TGL #1 (penis, distended, 6mm) was observed. The gross change was probably due to edema not detected microscopically.

Peritoneum [ Inflammation TGLS = 14-6 ] Inflammation Chronic, Minimal

Pituitary Gland [ Adenoma TGLS = 7-9 ] Pars Distalis Adenoma

Skin [ Inflammation TGLS = 15-7 ] SOA, Subcut Tiss Inflammation Chronic, Minimal

Spleen [ Leukemia Mononuclear TGLS = 9-10 ] Leukemia Mononuclear

PRIMARY CAUSE OF DEATH - Spleen Leukemia Mononuclear

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 88034-07

Test Type: CHRONIC

Route: SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY

Species/Strain: Rat/F 344/N

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Test Compound: Ozone/NNK

CAS Number: OZONNNKCOMB

Date Report Requested: 10/21/2014

Time Report Requested: 05:28:17

First Dose M/F: NA / NA

Lab: BNW

ANIMAL ID: 8415

TRT#: 3

SEX: Male

DAY ON TEST: 429

DOSE: 1 MG/KG NNK/AIR

DISP: Moribund Sacrifice

HISTO: 26299

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

\* Larynx

\* Lymph Node, Mediastinal

\* Trachea

INSUFFICIENT TISSUE

\* Lymph Node, Bronchial

OBSERVATIONS

Kidney		Nephropathy	Moderate
[ Nephropathy TGLS = 4-8 ]			
Liver		Necrosis	Focal, Mild
		Vacuolization Cytoplasmic	Mild
[ Vacuolization Cytoplasmic TGLS = 3-8 ]			
* Lung		Alveolar/Bronchiolar Adenoma	Multiple
	Alveolar Epith	Hyperplasia	Atypical, Mild
	Alveolus	Infiltration Cellular	Histiocyte, Mild
[ Alveolar/Bronchiolar Adenoma TGLS = 7,8-10 ]			
* Nose	Olfactory Epi	Degeneration	Hyaline, Minimal
Peritoneum		Inflammation	Chronic, Minimal
[ Inflammation TGLS = 5-7 ]			
Pituitary Gland	Pars Distalis	Adenoma	
[ Adenoma TGLS = 1-9 ]			
Skin	SOA, Subcut Tiss	Inflammation	Chronic, Minimal
[ Inflammation TGLS = 6-6 ]			
Spleen		Fibrosis	Mild
[ Fibrosis TGLS = 2-9 ]			

PRIMARY CAUSE OF DEATH

- Pituitary Gland Pars Distalis Adenoma

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 88034-07

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Date Report Requested: 10/21/2014

Test Type: CHRONIC

Test Compound: Ozone/NNK

Time Report Requested: 05:28:17

Route: SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY

CAS Number: OZONNNKCOMB

First Dose M/F: NA / NA

Species/Strain: Rat/F 344/N

Lab: BNW

ANIMAL ID: 8416

TRT#: 3

SEX: Male

DAY ON TEST: 590

DOSE: 1 MG/KG NNK/AIR

DISP: Moribund Sacrifice

HISTO: 26300

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

\* Larynx \* Trachea

MISSING

Pituitary Gland

OBSERVATIONS

Liver		Leukemia Mononuclear	
[ Leukemia Mononuclear TGLS = 6-8 ]			
* Lung	Alveolar Epith	Alveolar/Bronchiolar Adenoma Hyperplasia Leukemia Mononuclear	Multiple Atypical, Moderate
[ Hyperplasia TGLS = 2-3 ]			
[ Leukemia Mononuclear TGLS = 3-3 ]			
* Lymph Node, Bronchial		Leukemia Mononuclear	
* Lymph Node, Mediastinal		Leukemia Mononuclear	
Mesentery	Fat	Necrosis	Moderate
[ Necrosis TGLS = 4-9 ]			
* Nose	Olfactory Epi Lateral Wall	Degeneration Hyperplasia Inflammation	Hyaline, Minimal Moderate Suppurative, Moderate
Peritoneum		Inflammation	Chronic, Minimal
[ Inflammation TGLS = 7-7 ]			
Pituitary Gland			
Note: Pituitary gland was apparently lost during processing. No pituitary found on slide, block, or wet tissue.			
Skin	SOA, Subcut Tiss	Inflammation	Chronic, Minimal
[ Inflammation TGLS = 8-6 ]			
Spleen		Leukemia Mononuclear	
[ Leukemia Mononuclear TGLS = 5-8 ]			

PRIMARY CAUSE OF DEATH - Spleen Leukemia Mononuclear

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 88034-07

Test Type: CHRONIC

Route: SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY

Species/Strain: Rat/F 344/N

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Test Compound: Ozone/NNK

CAS Number: OZONNNKCOMB

Date Report Requested: 10/21/2014

Time Report Requested: 05:28:17

First Dose M/F: NA / NA

Lab: BNW

ANIMAL ID: 8417

TRT#: 3

SEX: Male

DAY ON TEST: 603

DOSE: 1 MG/KG NNK/AIR

DISP: Natural Death

HISTO: 26301

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

Adrenal Cortex  
Ureter

\* Larynx

\* Lymph Node, Bronchial

\* Trachea

OBSERVATIONS

Eye

[ Cataract TGLS = 2-10 ]

Cataract

Mild

Liver

[ Leukemia Mononuclear TGLS = 6-7 ]

Leukemia Mononuclear

\* Lung

[ Alveolar/Bronchiolar Adenoma TGLS = 3-7 ]

[ Alveolar/Bronchiolar Carcinoma TGLS = 3-3 ]

[ Leukemia Mononuclear TGLS = 4-3 ]

Alveolar/Bronchiolar Adenoma  
Alveolar/Bronchiolar Carcinoma  
Leukemia Mononuclear

Multiple

Lymph Node

Note: TGL 2 involves the axillary lymph node.

[ Leukemia Mononuclear TGLS = 8-8 ]

Leukemia Mononuclear

\* Lymph Node, Mediastinal

Mammary Gland

[ Galactocele TGLS = 9-9 ]

Leukemia Mononuclear  
Galactocele  
Inflammation

Moderate  
Chronic, Moderate

\* Nose

Peritoneum

[ Inflammation TGLS = 7-7 ]

Olfactory Epi

Degeneration  
Inflammation

Hyaline, Mild  
Chronic, Minimal

Pituitary Gland

[ Adenoma TGLS = 5-7 ]

Pars Distalis

Adenoma

Skin

[ Inflammation TGLS = 11-6 ]

SOA, Subcut Tiss

Inflammation

Chronic, Minimal

Spleen

[ Leukemia Mononuclear TGLS = 10-8 ]

Leukemia Mononuclear

\* PROTOCOL REQUIRED TISSUE



**Experiment Number:** 88034-07

**Test Type:** CHRONIC

**Route:** SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY

**Species/Strain:** Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

**Test Compound:** Ozone/NNK

**CAS Number:** OZONNNKCOMB

**Date Report Requested:** 10/21/2014

**Time Report Requested:** 05:28:17

**First Dose M/F:** NA / NA

**Lab:** BNW

---

**ANIMAL ID:** 8417

**TRT#:** 3

**SEX:** Male

**DAY ON TEST:** 603

**DOSE:** 1 MG/KG NNK/AIR

**DISP:** Natural Death

**HISTO:** 26301

---

**ORGAN AND ACCOUNTABLE SITE STATUS**

---

PRIMARY CAUSE OF DEATH

- Spleen Leukemia Mononuclear

---

\* PROTOCOL REQUIRED TISSUE

**Experiment Number:** 88034-07

**Test Type:** CHRONIC

**Route:** SUBCUTANEOUS|RESPIRATORY  
**EXPOSURE** WHOLE BODY

**Species/Strain:** Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

**Test Compound:** Ozone/NNK

**CAS Number:** OZONNNKCOMB

**Date Report Requested:** 10/21/2014

**Time Report Requested:** 05:28:17

**First Dose M/F:** NA / NA

**Lab:** BNW

**ANIMAL ID:** 8418

**TRT#:** 3

**SEX:** Male

**DAY ON TEST:** 683

**DOSE:** 1 MG/KG NNK/AIR

**DISP:** Moribund Sacrifice

**HISTO:** 26302

**ORGAN AND ACCOUNTABLE SITE STATUS**

**NORMAL**

\* Larynx

\* Trachea

**MISSING**

\* Lymph Node, Mediastinal

**OBSERVATIONS**

Kidney		Nephropathy	Moderate
[ Nephropathy TGLS = 5-10 ]			
Liver		Leukemia Mononuclear	
[ Leukemia Mononuclear TGLS = 4-11 ]			
* Lung		Alveolar/Bronchiolar Adenoma Alveolar/Bronchiolar Carcinoma Hyperplasia Leukemia Mononuclear	Atypical, Mild
[ Leukemia Mononuclear TGLS = 3-3 ]			
Lymph Node	Pancreatic	Leukemia Mononuclear	
[ Leukemia Mononuclear TGLS = 6-8 ]			
* Lymph Node, Bronchial		Leukemia Mononuclear	
* Nose	Olfactory Epi Goblet Cell, Lateral Wall Lateral Wall	Degeneration Hyperplasia Hyperplasia Inflammation	Hyaline, Minimal Minimal Mild Chronic, Minimal
Peritoneum			
[ Inflammation TGLS = 9-6 ]			
Skin	SOA, Subcut Tiss	Inflammation Inflammation	Chronic, Minimal Chronic, Moderate
[ Inflammation TGLS = 10-7 ]			
[ Inflammation TGLS = 1-9 ]			
Spleen		Leukemia Mononuclear	
[ Leukemia Mononuclear TGLS = 7-8 ]			
Testes	Interstitial Cell	Adenoma	
[ Adenoma TGLS = 8-8 ]			

\* PROTOCOL REQUIRED TISSUE

**Experiment Number:** 88034-07

**Test Type:** CHRONIC

**Route:** SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY

**Species/Strain:** Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

**Test Compound:** Ozone/NNK

**CAS Number:** OZONNNKCOMB

**Date Report Requested:** 10/21/2014

**Time Report Requested:** 05:28:17

**First Dose M/F:** NA / NA

**Lab:** BNW

---

**ANIMAL ID:** 8418

**TRT#:** 3

**SEX:** Male

**DAY ON TEST:** 683

**DOSE:** 1 MG/KG NNK/AIR

**DISP:** Moribund Sacrifice

**HISTO:** 26302

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**ORGAN AND ACCOUNTABLE SITE STATUS**

Thymus

Leukemia Mononuclear

[ Leukemia Mononuclear TGLS = 2-2 ]

---

**PRIMARY CAUSE OF DEATH**

- Spleen Leukemia Mononuclear

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 88034-07

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Date Report Requested: 10/21/2014

Test Type: CHRONIC

Test Compound: Ozone/NNK

Time Report Requested: 05:28:17

Route: SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY

CAS Number: OZONNNKCOMB

First Dose M/F: NA / NA

Species/Strain: Rat/F 344/N

Lab: BNW

ANIMAL ID: 8419

TRT#: 3

SEX: Male

DAY ON TEST: 687

DOSE: 1 MG/KG NNK/AIR

DISP: Moribund Sacrifice

HISTO: 26303

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

\* Larynx \* Trachea

OBSERVATIONS

Liver		Leukemia Mononuclear	
[ Leukemia Mononuclear TGLS = 5-6 ]			
* Lung	Alveolar Epith	Hyperplasia	Atypical, Moderate
		Leukemia Mononuclear	
[ Leukemia Mononuclear TGLS = 1-3 ]			
* Lymph Node, Bronchial		Leukemia Mononuclear	
* Lymph Node, Mediastinal		Leukemia Mononuclear	
Mesentery		Leukemia Mononuclear	
	Fat	Necrosis	Moderate
Note: TGL #7 is in mesentery rather than mesenteric lymph node. It consists of a large area of fat necrosis and adjacent leukemic infiltrate.			
[ Leukemia Mononuclear TGLS = 7-7 ]			
* Nose	Olfactory Epi	Degeneration	Hyaline, Minimal
	Olfactory Epi	Metaplasia	Minimal
Skin	SOA, Subcut Tiss	Inflammation	Chronic, Minimal
[ Inflammation TGLS = 6-6 ]			
Spleen		Fibrosis	Mild
		Leukemia Mononuclear	
[ Fibrosis TGLS = 4-8 ]			
[ Leukemia Mononuclear TGLS = 3-8 ]			
Testes	Interstit Cell	Adenoma	
[ Adenoma TGLS = 2-8 ]			

PRIMARY CAUSE OF DEATH - Spleen Leukemia Mononuclear

\* PROTOCOL REQUIRED TISSUE

**Experiment Number:** 88034-07

**Test Type:** CHRONIC

**Route:** SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY

**Species/Strain:** Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

**Test Compound:** Ozone/NNK

**CAS Number:** OZONNNKCOMB

**Date Report Requested:** 10/21/2014

**Time Report Requested:** 05:28:17

**First Dose M/F:** NA / NA

**Lab:** BNW

**ANIMAL ID:** 8420

**TRT#:** 3

**SEX:** Male

**DAY ON TEST:** 579

**DOSE:** 1 MG/KG NNK/AIR

**DISP:** Moribund Sacrifice

**HISTO:** 26304

**ORGAN AND ACCOUNTABLE SITE STATUS**

**NORMAL**

\* Larynx \* Trachea

**MISSING**

\* Lymph Node, Bronchial

**OBSERVATIONS**

Kidney [ Nephropathy TGLS = 6-12 ]		Nephropathy	Mild
Liver [ Leukemia Mononuclear TGLS = 13-13 ]		Degeneration Leukemia Mononuclear	Cystic, Mild
* Lung [ Alveolar/Bronchiolar Adenoma TGLS = 2-7 ] [ Hyperplasia TGLS = 3,12,14,15-9+8+10+11 ]	Alveolar Epith	Alveolar/Bronchiolar Adenoma Hyperplasia	Multiple Atypical, Mild
Lymph Node [ Leukemia Mononuclear TGLS = 9-12 ]	Renal	Leukemia Mononuclear	
* Lymph Node, Mediastinal		Leukemia Mononuclear	
Lymph Node, Mesenteric [ Leukemia Mononuclear TGLS = 8,11-12+13 ]		Leukemia Mononuclear	
* Nose		Inflammation	Suppurative, Minimal
Peritoneum [ Inflammation TGLS = 7-13 ]		Inflammation	Chronic, Minimal
Pituitary Gland [ Adenoma TGLS = 4-12 ]	Pars Distalis	Adenoma	
Skin [ Inflammation TGLS = 10-6 ]	SOA, Subcut Tiss	Inflammation	Chronic, Minimal
Testes [ Adenoma TGLS = 5-12 ]	Interstit Cell	Adenoma	

**PRIMARY CAUSE OF DEATH** - Liver Leukemia Mononuclear

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 88034-07

Test Type: CHRONIC

Route: SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY

Species/Strain: Rat/F 344/N

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Test Compound: Ozone/NNK

CAS Number: OZONNNKCOMB

Date Report Requested: 10/21/2014

Time Report Requested: 05:28:17

First Dose M/F: NA / NA

Lab: BNW

ANIMAL ID: 8421

TRT#: 3

SEX: Male

DAY ON TEST: 604

DOSE: 1 MG/KG NNK/AIR

DISP: Moribund Sacrifice

HISTO: 26305

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

\* Larynx \* Trachea

MISSING

\* Lymph Node, Bronchial

OBSERVATIONS

Liver		Hyperplasia Leukemia Mononuclear Vacuolization Cytoplasmic	Focal, Moderate  Mild
Note: TGL #5 is a well-demarcated area of liver characterized primarily by cytoplasmic vacuolization of hyperplastic hepatocytes (fatty change). [ Hyperplasia TGLS = 5-8 ] [ Leukemia Mononuclear TGLS = 3-6 ]			
* Lung	Alveolar Epith Alveolus	Alveolar/Bronchiolar Adenoma Hyperplasia Infiltration Cellular	Atypical, Mild Histiocyte, Moderate
	[ Hyperplasia TGLS = 8-3 ]		
Lymph Node, Mandibular		Infiltration Cellular	Plasma Cell, Mild
	[ Infiltration Cellular TGLS = 6-7 ]		
* Lymph Node, Mediastinal		Leukemia Mononuclear	
* Nose	Olfactory Epi Pars Distalis	Degeneration Adenoma	Hyaline, Minimal
Pituitary Gland			
	[ Adenoma TGLS = 1-7 ]		
Skin	SOA, Subcut Tiss	Inflammation	Chronic, Minimal
	[ Inflammation TGLS = 4-6 ]		
Spleen		Leukemia Mononuclear Necrosis	Marked
	[ Leukemia Mononuclear TGLS = 7-7 ] [ Necrosis TGLS = 2-7 ]		

PRIMARY CAUSE OF DEATH - Spleen Leukemia Mononuclear

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 88034-07

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Date Report Requested: 10/21/2014

Test Type: CHRONIC

Test Compound: Ozone/NNK

Time Report Requested: 05:28:17

Route: SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY

CAS Number: OZONNNKCOMB

First Dose M/F: NA / NA

Species/Strain: Rat/F 344/N

Lab: BNW

ANIMAL ID: 8422

TRT#: 3

SEX: Male

DAY ON TEST: 695

DOSE: 1 MG/KG NNK/AIR

DISP: Moribund Sacrifice

HISTO: 26306

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

\* Larynx

\* Lymph Node, Mediastinal

\* Nose

\* Trachea

MISSING

\* Lymph Node, Bronchial

OBSERVATIONS

Kidney		Nephropathy	Marked
[ Nephropathy TGLS = 3-11 ]			
Liver		Leukemia Mononuclear	
[ Leukemia Mononuclear TGLS = 1-12 ]			
* Lung	Alveolar Epith	Alveolar/Bronchiolar Adenoma Hyperplasia	Atypical, Mild
Note: NO MICROSCOPICALLY CORRESPONDING LESION FOR TGLs = 9-8.			
[ Alveolar/Bronchiolar Adenoma TGLS = 8-3 ]			
[ Hyperplasia TGLS = 8-3 ]			
Lymph Node	Renal	Infiltration Cellular	Plasma Cell, Mild
[ Infiltration Cellular TGLS = 5-9 ]			
Peritoneum		Inflammation	Chronic, Minimal
[ Inflammation TGLS = 4-6 ]			
Skin	SOA, Subcut Tiss	Inflammation Trichoepithelioma	Chronic, Minimal
[ Inflammation TGLS = 6-7 ]			
[ Trichoepithelioma TGLS = 7-10 ]			
Spleen		Leukemia Mononuclear	
[ Leukemia Mononuclear TGLS = 2-13 ]			

PRIMARY CAUSE OF DEATH

- Spleen Leukemia Mononuclear

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 88034-07

Test Type: CHRONIC

Route: SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY

Species/Strain: Rat/F 344/N

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Test Compound: Ozone/NNK

CAS Number: OZONNNKCOMB

Date Report Requested: 10/21/2014

Time Report Requested: 05:28:17

First Dose M/F: NA / NA

Lab: BNW

ANIMAL ID: 8423

TRT#: 3

SEX: Male

DAY ON TEST: 736

DOSE: 1 MG/KG NNK/AIR

DISP: Terminal Sacrifice

HISTO: 26307

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

\* Larynx

\* Lymph Node, Mediastinal

\* Trachea

MISSING

\* Lymph Node, Bronchial

OBSERVATIONS

Kidney [ Nephropathy TGLS = 5-10 ]		Nephropathy	Marked
* Lung [ Hemorrhage TGLS = 4-3 ]	Alveolar Epith Alveolus	Alveolar/Bronchiolar Adenoma Hemorrhage Hyperplasia Infiltration Cellular	Mild Atypical, Mild Histiocyte, Moderate
Lymph Node [ Hemorrhage TGLS = 6-9 ]	Renal Renal	Hemorrhage Infiltration Cellular	Moderate Plasma Cell, Mild
* Nose Peritoneum [ Inflammation TGLS = 7-7 ]	Olfactory Epi	Degeneration Inflammation	Hyaline, Minimal Chronic, Minimal
Pituitary Gland [ Adenoma TGLS = 2-11 ]	Pars Distalis	Adenoma	
Skin Note: Hyperkeratosis, skin (TGL 1) involved the skin of the tail only. [ Hyperkeratosis TGLS = 1-6 ] [ Inflammation TGLS = 8-8 ]	SOA, Subcut Tiss	Hyperkeratosis Inflammation	Moderate Chronic, Minimal
Spleen [ Leukemia Mononuclear TGLS = 3-11 ]		Leukemia Mononuclear	

PRIMARY CAUSE OF DEATH

-

\* PROTOCOL REQUIRED TISSUE



Experiment Number: 88034-07

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Date Report Requested: 10/21/2014

Test Type: CHRONIC

Test Compound: Ozone/NNK

Time Report Requested: 05:28:17

Route: SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY

CAS Number: OZONNNKCOMB

First Dose M/F: NA / NA

Species/Strain: Rat/F 344/N

Lab: BNW

ANIMAL ID: 8424

TRT#: 3

SEX: Male

DAY ON TEST: 544

DOSE: 1 MG/KG NNK/AIR

DISP: Moribund Sacrifice

HISTO: 26308

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

\* Larynx

\* Trachea

MISSING

\* Lymph Node, Bronchial

OBSERVATIONS

* Lung	Alveolar Epith Alveolus	Hyperplasia Infiltration Cellular	Atypical, Mild Histiocyte, Mild
Note: No microscopic lesion corresponding to TGL #1 (2mm dark focus) was found on slide #7, thus NCL was entered on IANR form.			
Lymph Node [ Inflammation TGLS = 5-8 ]	Renal	Inflammation	Granulomatous, Mild
* Lymph Node, Mediastinal		Hemorrhage	Mild
* Nose	Olfactory Epi Pars Distalis	Degeneration Adenoma	Hyaline, Minimal
Pituitary Gland [ Adenoma TGLS = 2-8 ]			
Preputial Gland [ Inflammation TGLS = 3-9 ]		Inflammation	Chronic Active, Mild
Skin [ Inflammation TGLS = 7-6 ] [ Sarcoma TGLS = 6-10 ]	SOA, Subcut Tiss SOA, Subcut Tiss	Inflammation Sarcoma	Chronic, Minimal
Spleen [ Accessory Spleen TGLS = 4-8 ]		Accessory Spleen	

PRIMARY CAUSE OF DEATH

- Skin SOA Subcut Tiss Sarcoma

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 88034-07

Test Type: CHRONIC

Route: SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY

Species/Strain: Rat/F 344/N

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Test Compound: Ozone/NNK

CAS Number: OZONNNKCOMB

Date Report Requested: 10/21/2014

Time Report Requested: 05:28:17

First Dose M/F: NA / NA

Lab: BNW

ANIMAL ID: 8425

TRT#: 3

SEX: Male

DAY ON TEST: 602

DOSE: 1 MG/KG NNK/AIR

DISP: Moribund Sacrifice

HISTO: 26309

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

\* Larynx

Stomach, Forestomach

\* Trachea

OBSERVATIONS

Kidney

Infarct

Moderate

Nephropathy

Moderate

[ Infarct TGLS = 8-8 ]

Liver

Hyperplasia

Focal, Marked

Leukemia Mononuclear

Note: TGL #6 is marked focal hepatocellular hyperplasia probably secondary to mononuclear cell leukemia.

[ Hyperplasia TGLS = 6-7 ]

[ Leukemia Mononuclear TGLS = 7-10 ]

\* Lung

Alveolar Epith

Hyperplasia

Atypical, Minimal

Leukemia Mononuclear

[ Leukemia Mononuclear TGLS = 4-3 ]

Lymph Node

Renal

Hemorrhage

Moderate

Pancreatic

Leukemia Mononuclear

[ Hemorrhage TGLS = 14-7 ]

[ Leukemia Mononuclear TGLS = 9-11 ]

\* Lymph Node, Bronchial

Leukemia Mononuclear

Lymph Node, Mandibular

Infiltration Cellular

Plasma Cell, Moderate

[ Infiltration Cellular TGLS = 2-7 ]

\* Lymph Node, Mediastinal

Leukemia Mononuclear

[ Leukemia Mononuclear TGLS = 3-2 ]

\* Nose

Olfactory Epi

Degeneration

Hyaline, Minimal

Penis

Inflammation

Chronic Active, Mild

[ Inflammation TGLS = 1-12 ]

Pituitary Gland

Pars Distalis

Adenoma

[ Adenoma TGLS = 5-7 ]

Skin

SOA, Subcut Tiss

Inflammation

Chronic, Minimal

[ Inflammation TGLS = 15-6 ]

\* PROTOCOL REQUIRED TISSUE

**Experiment Number:** 88034-07

**Test Type:** CHRONIC

**Route:** SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY

**Species/Strain:** Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

**Test Compound:** Ozone/NNK

**CAS Number:** OZONNNKCOMB

**Date Report Requested:** 10/21/2014

**Time Report Requested:** 05:28:17

**First Dose M/F:** NA / NA

**Lab:** BNW

**ANIMAL ID:** 8425

**TRT#:** 3

**SEX:** Male

**DAY ON TEST:** 602

**DOSE:** 1 MG/KG NNK/AIR

**DISP:** Moribund Sacrifice

**HISTO:** 26309

**ORGAN AND ACCOUNTABLE SITE STATUS**

Spleen		Fibrosis Leukemia Mononuclear	Mild
[ Fibrosis TGLS = 12-9 ]			
[ Leukemia Mononuclear TGLS = 10,11-9 ]			
Stom Forestom			
Note: There was no corresponding histologic lesion to TGL #17 (forestomach focus, 1-2mm dia. multiple, dark).			
Stomach, Glandular		Necrosis	Mild
[ Necrosis TGLS = 16-10 ]			
Testes	Interstit Cell	Adenoma	
[ Adenoma TGLS = 13-7 ]			

**PRIMARY CAUSE OF DEATH** - Spleen Leukemia Mononuclear

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 88034-07

Test Type: CHRONIC

Route: SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY

Species/Strain: Rat/F 344/N

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Test Compound: Ozone/NNK

CAS Number: OZONNNKCOMB

Date Report Requested: 10/21/2014

Time Report Requested: 05:28:17

First Dose M/F: NA / NA

Lab: BNW

ANIMAL ID: 8426

TRT#: 3

SEX: Male

DAY ON TEST: 683

DOSE: 1 MG/KG NNK/AIR

DISP: Moribund Sacrifice

HISTO: 26310

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

\* Larynx \* Trachea

OBSERVATIONS

Kidney		Leukemia Mononuclear Nephropathy	Moderate
[ Nephropathy TGLS = 7-9 ]			
Liver		Leukemia Mononuclear	
[ Leukemia Mononuclear TGLS = 5,6-8 ]			
* Lung	Alveolar Epith	Alveolar/Bronchiolar Carcinoma Hyperplasia Leukemia Mononuclear	Atypical, Mild
[ Alveolar/Bronchiolar Carcinoma TGLS = 2-3 ]			
[ Hyperplasia TGLS = 3-3 ]			
Lymph Node	Renal	Leukemia Mononuclear	
[ Leukemia Mononuclear TGLS = 13-12 ]			
* Lymph Node, Bronchial		Leukemia Mononuclear	
Lymph Node, Mandibular		Leukemia Mononuclear	
[ Leukemia Mononuclear TGLS = 1-8 ]			
* Lymph Node, Mediastinal		Leukemia Mononuclear	
Lymph Node, Mesenteric		Leukemia Mononuclear	
[ Leukemia Mononuclear TGLS = 12-10 ]			
* Nose	Respirat Epith Olfactory Epi Goblet Cell, Lateral Wall Lateral Wall	Adenoma Degeneration Hyperplasia Hyperplasia Inflammation	Hyaline, Minimal Minimal Minimal Suppurative, Mild
Note: Suppurative inflammation is in posterior nasal section. Epithelial hyperplasia, mixed cell infiltrate and goblet cell hyperplasia are in anterior sections.			
Peritoneum		Inflammation	Chronic, Minimal
[ Inflammation TGLS = 14-6 ]			
Pituitary Gland		Leukemia Mononuclear	

\* PROTOCOL REQUIRED TISSUE

**Experiment Number:** 88034-07

**Test Type:** CHRONIC

**Route:** SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY

**Species/Strain:** Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

**Test Compound:** Ozone/NNK

**CAS Number:** OZONNNKCOMB

**Date Report Requested:** 10/21/2014

**Time Report Requested:** 05:28:17

**First Dose M/F:** NA / NA

**Lab:** BNW

**ANIMAL ID:** 8426

**TRT#:** 3

**SEX:** Male

**DAY ON TEST:** 683

**DOSE:** 1 MG/KG NNK/AIR

**DISP:** Moribund Sacrifice

**HISTO:** 26310

**ORGAN AND ACCOUNTABLE SITE STATUS**

[ Leukemia Mononuclear TGLS = 4-8 ]

Seminal Vesicle

Leukemia Mononuclear

[ Leukemia Mononuclear TGLS = 11-11 ]

Spleen

Accessory Spleen

Fibrosis

Mild

Leukemia Mononuclear

[ Accessory Spleen TGLS = 9-7 ]

[ Fibrosis TGLS = 10-7 ]

[ Leukemia Mononuclear TGLS = 8-7 ]

**PRIMARY CAUSE OF DEATH**

- Spleen Leukemia Mononuclear

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 88034-07

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Date Report Requested: 10/21/2014

Test Type: CHRONIC

Test Compound: Ozone/NNK

Time Report Requested: 05:28:17

Route: SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY

CAS Number: OZONNNKCOMB

First Dose M/F: NA / NA

Species/Strain: Rat/F 344/N

Lab: BNW

ANIMAL ID: 8427

TRT#: 3

SEX: Male

DAY ON TEST: 645

DOSE: 1 MG/KG NNK/AIR

DISP: Moribund Sacrifice

HISTO: 26311

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

\* Larynx \* Trachea

OBSERVATIONS

Kidney		Nephropathy	Moderate
[ Nephropathy TGLS = 4-9 ]			
Liver		Degeneration	Cystic, Moderate
		Leukemia Mononuclear	
		Necrosis	Focal, Moderate
[ Leukemia Mononuclear TGLS = 3-8 ]			
* Lung		Alveolar/Bronchiolar Adenoma	
	Alveolar Epith	Hyperplasia	Atypical, Mild
		Leukemia Mononuclear	
[ Leukemia Mononuclear TGLS = 2-3 ]			
Lymph Node	Pancreatic	Leukemia Mononuclear	
	Renal	Leukemia Mononuclear	
[ Leukemia Mononuclear TGLS = 5-8 ]			
[ Leukemia Mononuclear TGLS = 8-10 ]			
* Lymph Node, Bronchial		Leukemia Mononuclear	
* Lymph Node, Mediastinal		Leukemia Mononuclear	
Mammary Gland		Hyperplasia	Mild
[ Hyperplasia TGLS = 1-10 ]			
* Nose	Olfactory Epi	Degeneration	Hyaline, Minimal
Peritoneum		Inflammation	Chronic, Minimal
[ Inflammation TGLS = 9-7 ]			
Skin	SOA, Subcut Tiss	Inflammation	Chronic, Minimal
[ Inflammation TGLS = 10-6 ]			
Spleen		Leukemia Mononuclear	
[ Leukemia Mononuclear TGLS = 6,7-8 ]			

PRIMARY CAUSE OF DEATH - Spleen Leukemia Mononuclear

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 88034-07

Test Type: CHRONIC

Route: SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY

Species/Strain: Rat/F 344/N

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Test Compound: Ozone/NNK

CAS Number: OZONNNKCOMB

Date Report Requested: 10/21/2014

Time Report Requested: 05:28:17

First Dose M/F: NA / NA

Lab: BNW

ANIMAL ID: 8428

TRT#: 3

SEX: Male

DAY ON TEST: 704

DOSE: 1 MG/KG NNK/AIR

DISP: Moribund Sacrifice

HISTO: 26312

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

\* Larynx \* Trachea

OBSERVATIONS

Kidney		Leukemia Mononuclear	
[ Leukemia Mononuclear TGLS = 11,12-14+15 ]			
Liver		Leukemia Mononuclear	
[ Leukemia Mononuclear TGLS = 8-12 ]			
* Lung		Alveolar/Bronchiolar Adenoma	Multiple
		Alveolar/Bronchiolar Carcinoma	
	Alveolar Epith	Hyperplasia	Atypical, Mild
[ Hyperplasia TGLS = 6-3 ]		Leukemia Mononuclear	
Lymph Node	Renal	Leukemia Mononuclear	
[ Leukemia Mononuclear TGLS = 16-11 ]			
* Lymph Node, Bronchial		Leukemia Mononuclear	
Lymph Node, Mandibular		Leukemia Mononuclear	
[ Leukemia Mononuclear TGLS = 4-9 ]			
* Lymph Node, Mediastinal		Leukemia Mononuclear	
[ Leukemia Mononuclear TGLS = 5-2 ]			
* Nose	Olfactory Epi	Degeneration	Hyaline, Minimal
Peritoneum		Inflammation	Chronic, Minimal
[ Inflammation TGLS = 17-6 ]			
Pituitary Gland	Pars Distalis	Hyperplasia	Mild
		Leukemia Mononuclear	
[ Hyperplasia TGLS = 7-12 ]			
Skin	Sebaceous GI	Adenoma	
	SOA, Subcut Tiss	Inflammation	Chronic, Minimal
		Keratoacanthoma	
	SOA, Subcut Tiss	Sarcoma	

Note: TGL #15 is a sarcoma (with small amounts of osteoid) in the subcutaneous tissue with no obvious involvement of the axillary lymph node.

\* PROTOCOL REQUIRED TISSUE

**Experiment Number:** 88034-07

**Test Type:** CHRONIC

**Route:** SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY

**Species/Strain:** Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

**Test Compound:** Ozone/NNK

**CAS Number:** OZONNNKCOMB

**Date Report Requested:** 10/21/2014

**Time Report Requested:** 05:28:17

**First Dose M/F:** NA / NA

**Lab:** BNW

**ANIMAL ID:** 8428

**TRT#:** 3

**SEX:** Male

**DAY ON TEST:** 704

**DOSE:** 1 MG/KG NNK/AIR

**DISP:** Moribund Sacrifice

**HISTO:** 26312

**ORGAN AND ACCOUNTABLE SITE STATUS**

[ Adenoma TGLS = 18-16 ]

[ Inflammation TGLS = 19-7 ]

[ Keratoacanthoma TGLS = 3-8 ]

[ Sarcoma TGLS = 15-10 ]

Spleen

Leukemia Mononuclear

[ Leukemia Mononuclear TGLS = 9,10-13 ]

Testes

Interstitial Cell

Adenoma

Atrophy

Moderate

[ Adenoma TGLS = 14-15 ]

[ Atrophy TGLS = 13-15 ]

**PRIMARY CAUSE OF DEATH**

- Spleen Leukemia Mononuclear

\* PROTOCOL REQUIRED TISSUE



Experiment Number: 88034-07

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Date Report Requested: 10/21/2014

Test Type: CHRONIC

Test Compound: Ozone/NNK

Time Report Requested: 05:28:17

Route: SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY

CAS Number: OZONNNKCOMB

First Dose M/F: NA / NA

Species/Strain: Rat/F 344/N

Lab: BNW

ANIMAL ID: 8429

TRT#: 3

SEX: Male

DAY ON TEST: 603

DOSE: 1 MG/KG NNK/AIR

DISP: Moribund Sacrifice

HISTO: 26313

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

Kidney

\* Larynx

\* Lung

\* Trachea

MISSING

\* Lymph Node, Bronchial

OBSERVATIONS

Kidney

Note: No microscopic lesion corresponding to TGL #5 (kidney, right, focus, 2mm x 1mm, pale) was observed.

Liver

Hyperplasia

Focal, Marked

Leukemia Mononuclear

[ Hyperplasia TGLS = 6-11 ]

Lymph Node

Pancreatic

Leukemia Mononuclear

[ Leukemia Mononuclear TGLS = 4-8 ]

\* Lymph Node, Mediastinal

Leukemia Mononuclear

Lymph Node, Mesenteric

Leukemia Mononuclear

[ Leukemia Mononuclear TGLS = 9-9 ]

\* Nose

Olfactory Epi

Degeneration

Hyaline, Minimal

Peritoneum

Inflammation

Chronic, Minimal

[ Inflammation TGLS = 7-6 ]

Pituitary Gland

Pars Distalis

Adenoma

[ Adenoma TGLS = 1-11 ]

Skin

SOA, Subcut Tiss

Inflammation

Chronic, Minimal

[ Inflammation TGLS = 8-7 ]

Spleen

Leukemia Mononuclear

[ Leukemia Mononuclear TGLS = 3-10 ]

PRIMARY CAUSE OF DEATH

- Spleen Leukemia Mononuclear

\* PROTOCOL REQUIRED TISSUE

**Experiment Number:** 88034-07

**Test Type:** CHRONIC

**Route:** SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY

**Species/Strain:** Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

**Test Compound:** Ozone/NNK

**CAS Number:** OZONNNKCOMB

**Date Report Requested:** 10/21/2014

**Time Report Requested:** 05:28:17

**First Dose M/F:** NA / NA

**Lab:** BNW

**ANIMAL ID:** 8430

**TRT#:** 3

**SEX:** Male

**DAY ON TEST:** 605

**DOSE:** 1 MG/KG NNK/AIR

**DISP:** Moribund Sacrifice

**HISTO:** 26314

**ORGAN AND ACCOUNTABLE SITE STATUS**

**NORMAL**

\* Larynx

\* Lymph Node, Bronchial

\* Lymph Node, Mediastinal

\* Trachea

**OBSERVATIONS**

Kidney		Nephropathy	Moderate
[ Nephropathy TGLS = 5-9 ]			
Liver		Hepatocellular Adenoma Leukemia Mononuclear	
[ Hepatocellular Adenoma TGLS = 6-10 ]			
* Lung	Alveolar Epith	Congestion Hyperplasia	Minimal Atypical, Mild
[ Congestion TGLS = 1-3 ]			
* Nose	Olfactory Epi	Degeneration Inflammation	Hyaline, Minimal Chronic, Minimal
Peritoneum			
[ Inflammation TGLS = 7-7 ]			
Pituitary Gland	Pars Distalis	Adenoma	
[ Adenoma TGLS = 2-8 ]			
Skin	SOA, Subcut Tiss	Inflammation	Chronic, Minimal
[ Inflammation TGLS = 8-6 ]			
Spleen		Fibrosis Leukemia Mononuclear	Moderate
[ Fibrosis TGLS = 4-8 ]			
[ Leukemia Mononuclear TGLS = 3-8 ]			

**PRIMARY CAUSE OF DEATH** - Spleen Leukemia Mononuclear

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 88034-07

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Date Report Requested: 10/21/2014

Test Type: CHRONIC

Test Compound: Ozone/NNK

Time Report Requested: 05:28:17

Route: SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY

CAS Number: OZONNNKCOMB

First Dose M/F: NA / NA

Species/Strain: Rat/F 344/N

Lab: BNW

ANIMAL ID: 8431

TRT#: 3

SEX: Male

DAY ON TEST: 712

DOSE: 1 MG/KG NNK/AIR

DISP: Moribund Sacrifice

HISTO: 26315

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

\* Larynx \* Trachea

OBSERVATIONS

Kidney		Nephropathy	Moderate
[ Nephropathy TGLS = 4-8 ]			
Liver		Leukemia Mononuclear	
[ Leukemia Mononuclear TGLS = 2,3,-8 ]			
* Lung	Alveolar Epith	Hyperplasia	Atypical, Minimal
Lymph Node	Pancreatic	Leukemia Mononuclear	
[ Leukemia Mononuclear TGLS = 7-9 ]			
* Lymph Node, Bronchial		Leukemia Mononuclear	
* Lymph Node, Mediastinal		Leukemia Mononuclear	
Lymph Node, Mesenteric		Leukemia Mononuclear	
[ Leukemia Mononuclear TGLS = 10-10 ]			
* Nose	Olfactory Epi	Degeneration	Hyaline, Mild
Peritoneum		Inflammation	Chronic, Minimal
[ Inflammation TGLS = 8-7 ]			
Pituitary Gland	Pars Distalis	Adenoma	
[ Adenoma TGLS = 1-8 ]			
Skin	SOA, Subcut Tiss	Inflammation	Chronic, Minimal
[ Inflammation TGLS = 9-6 ]			
Spleen		Leukemia Mononuclear	
[ Leukemia Mononuclear TGLS = 5,6-9 ]			

PRIMARY CAUSE OF DEATH - Spleen Leukemia Mononuclear

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 88034-07

Test Type: CHRONIC

Route: SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY

Species/Strain: Rat/F 344/N

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Test Compound: Ozone/NNK

CAS Number: OZONNNKCOMB

Date Report Requested: 10/21/2014

Time Report Requested: 05:28:17

First Dose M/F: NA / NA

Lab: BNW

ANIMAL ID: 8432

TRT#: 3

SEX: Male

DAY ON TEST: 486

DOSE: 1 MG/KG NNK/AIR

DISP: Moribund Sacrifice

HISTO: 26316

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

\* Larynx \* Trachea

OBSERVATIONS

Intestine Large, Cecum [ Ulcer TGLS = 10-8 ]		Ulcer	Moderate
Liver [ Leukemia Mononuclear TGLS = 5-7 ]		Leukemia Mononuclear	
* Lung [ Leukemia Mononuclear TGLS = 4-3 ]		Leukemia Mononuclear	
Lymph Node [ Leukemia Mononuclear TGLS = 6-8 ]	Pancreatic	Leukemia Mononuclear	
* Lymph Node, Bronchial Lymph Node, Mandibular [ Leukemia Mononuclear TGLS = 1-9 ]		Leukemia Mononuclear Leukemia Mononuclear	
* Lymph Node, Mediastinal [ Leukemia Mononuclear TGLS = 2-2 ]		Leukemia Mononuclear	
* Nose Pituitary Gland [ Adenoma TGLS = 3-8 ]	Olfactory Epi Pars Distalis	Degeneration Adenoma Leukemia Mononuclear	Hyaline, Minimal
Skin [ Inflammation TGLS = 8-6 ]	SOA, Subcut Tiss	Inflammation	Chronic, Minimal
Spleen [ Leukemia Mononuclear TGLS = 7-7 ]		Leukemia Mononuclear	

PRIMARY CAUSE OF DEATH - Spleen Leukemia Mononuclear

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 88034-07

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Date Report Requested: 10/21/2014

Test Type: CHRONIC

Test Compound: Ozone/NNK

Time Report Requested: 05:28:17

Route: SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY

CAS Number: OZONNNKCOMB

First Dose M/F: NA / NA

Species/Strain: Rat/F 344/N

Lab: BNW

ANIMAL ID: 8433

TRT#: 3

SEX: Male

DAY ON TEST: 540

DOSE: 1 MG/KG NNK/AIR

DISP: Moribund Sacrifice

HISTO: 26317

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

\* Larynx \* Trachea

OBSERVATIONS

Liver		Leukemia Mononuclear	
[ Leukemia Mononuclear TGLS = 5-7 ]			
* Lung	Alveolar Epith	Hyperplasia	Atypical, Minimal
		Leukemia Mononuclear	
* Lymph Node, Bronchial		Leukemia Mononuclear	
Lymph Node, Mandibular		Leukemia Mononuclear	
[ Leukemia Mononuclear TGLS = 7-7 ]			
* Lymph Node, Mediastinal		Leukemia Mononuclear	
Lymph Node, Mesenteric		Leukemia Mononuclear	
[ Leukemia Mononuclear TGLS = 2-7 ]			
Mesentery		Leukemia Mononuclear	
[ Leukemia Mononuclear TGLS = 3-8 ]			
* Nose	Olfactory Epi	Degeneration	Hyaline, Mild
Skin	SOA, Subcut Tiss	Inflammation	Chronic, Minimal
[ Inflammation TGLS = 6-6 ]			
Spleen		Leukemia Mononuclear	
[ Leukemia Mononuclear TGLS = 4-8 ]			
Thymus		Leukemia Mononuclear	
[ Leukemia Mononuclear TGLS = 1-2 ]			

PRIMARY CAUSE OF DEATH - Spleen Leukemia Mononuclear

\* PROTOCOL REQUIRED TISSUE

**Experiment Number:** 88034-07

**Test Type:** CHRONIC

**Route:** SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY

**Species/Strain:** Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

**Test Compound:** Ozone/NNK

**CAS Number:** OZONNNKCOMB

**Date Report Requested:** 10/21/2014

**Time Report Requested:** 05:28:18

**First Dose M/F:** NA / NA

**Lab:** BNW

**ANIMAL ID:** 8434

**TRT#:** 3

**SEX:** Male

**DAY ON TEST:** 450

**DOSE:** 1 MG/KG NNK/AIR

**DISP:** Moribund Sacrifice

**HISTO:** 26318

**ORGAN AND ACCOUNTABLE SITE STATUS**

**NORMAL**

\* Larynx

\* Lymph Node, Mediastinal

\* Trachea

**MISSING**

\* Lymph Node, Bronchial

**OBSERVATIONS**

\* Lung

Alveolar Epith

Hyperplasia

Atypical, Mild

Alveolus

Infiltration Cellular

Histiocyte, Minimal

[ Hyperplasia TGLS = 4,5-9 ]

\* Nose

Olfactory Epi

Degeneration

Hyaline, Minimal

Peritoneum

Inflammation

Chronic, Minimal

[ Inflammation TGLS = 3-7 ]

Skin

Subcut Tiss

Fibroma

Chronic, Minimal

SOA, Subcut Tiss

Inflammation

Note: Although TGL #1 does not appear to be malignant, it was quite large and ulcerated, and was the reason the rat was submitted for moribund sacrifice.

[ Fibroma TGLS = 1-8 ]

[ Inflammation TGLS = 2-6 ]

**PRIMARY CAUSE OF DEATH**

- Skin Subcut Tiss Fibroma

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 88034-07

Test Type: CHRONIC

Route: SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY

Species/Strain: Rat/F 344/N

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Test Compound: Ozone/NNK

CAS Number: OZONNNKCOMB

Date Report Requested: 10/21/2014

Time Report Requested: 05:28:18

First Dose M/F: NA / NA

Lab: BNW

ANIMAL ID: 8435

TRT#: 3

SEX: Male

DAY ON TEST: 736

DOSE: 1 MG/KG NNK/AIR

DISP: Terminal Sacrifice

HISTO: 26319

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

\* Larynx \* Trachea

OBSERVATIONS

Kidney		Leukemia Mononuclear Nephropathy	Moderate
[ Nephropathy TGLS = 7-9 ]			
* Lung	Serosa Alveolar Epith	Fibrosis Hyperplasia Leukemia Mononuclear	Mild Atypical, Mild
[ Fibrosis TGLS = 11-3 ]			
[ Hyperplasia TGLS = 13-3 ]			
Lymph Node	Pancreatic Renal	Leukemia Mononuclear Leukemia Mononuclear	
[ Leukemia Mononuclear TGLS = 14-11 ]			
[ Leukemia Mononuclear TGLS = 8-11 ]			
* Lymph Node, Bronchial		Leukemia Mononuclear	
* Lymph Node, Mediastinal		Leukemia Mononuclear	
Mesentery		Leukemia Mononuclear	
[ Leukemia Mononuclear TGLS = 9-12 ]			
* Nose	Olfactory Epi	Degeneration Inflammation	Hyaline, Minimal Chronic, Minimal
Peritoneum			
[ Inflammation TGLS = 10-6 ]			
Pituitary Gland	Pars Distalis	Adenoma	
[ Adenoma TGLS = 1-8 ]			
Skin	SOA, Subcut Tiss	Inflammation	Chronic, Minimal
[ Inflammation TGLS = 12-7 ]			
Spleen		Leukemia Mononuclear	
[ Leukemia Mononuclear TGLS = 3,4,5,6-10 ]			
Testes	Interstit Cell	Adenoma	
[ Adenoma TGLS = 2-8 ]			

\* PROTOCOL REQUIRED TISSUE

**Experiment Number:** 88034-07

**Test Type:** CHRONIC

**Route:** SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY

**Species/Strain:** Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

**Test Compound:** Ozone/NNK

**CAS Number:** OZONNNKCOMB

**Date Report Requested:** 10/21/2014

**Time Report Requested:** 05:28:18

**First Dose M/F:** NA / NA

**Lab:** BNW

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**ANIMAL ID:** 8435

**TRT#:** 3

**SEX:** Male

**DAY ON TEST:** 736

**DOSE:** 1 MG/KG NNK/AIR

**DISP:** Terminal Sacrifice

**HISTO:** 26319

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**ORGAN AND ACCOUNTABLE SITE STATUS**

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PRIMARY CAUSE OF DEATH

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\* PROTOCOL REQUIRED TISSUE



Experiment Number: 88034-07

Test Type: CHRONIC

Route: SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY

Species/Strain: Rat/F 344/N

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Test Compound: Ozone/NNK

CAS Number: OZONNNKCOMB

Date Report Requested: 10/21/2014

Time Report Requested: 05:28:18

First Dose M/F: NA / NA

Lab: BNW

ANIMAL ID: 8436

TRT#: 3

SEX: Male

DAY ON TEST: 590

DOSE: 1 MG/KG NNK/AIR

DISP: Natural Death

HISTO: 26320

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

\* Larynx

\* Lymph Node, Bronchial

\* Lymph Node, Mediastinal

\* Trachea

AUTO PRECLUDES DIAG.

Intestine Large, Cecum

OBSERVATIONS

Int Lg Cecum

Note: No histologic lesion corresponding to TGL #6 was observed. Autolysis precludes definitive diagnosis.

Liver Leukemia Mononuclear

[ Leukemia Mononuclear TGLS = 2-8 ]

\* Lung

Alveolar Epith  
Alveolus

Hemorrhage Mild  
Hyperplasia Atypical, Mild  
Infiltration Cellular Histiocyte, Focal, Moderate

[ Hemorrhage TGLS = 1-3 ]

[ Hyperplasia TGLS = 7-7 ]

\* Nose

Olfactory Epi  
Pars Distalis

Degeneration Hyaline, Mild  
Adenoma

Pituitary Gland

[ Adenoma TGLS = 8-9 ]

Skin

SOA, Subcut Tiss

Inflammation Chronic, Minimal

[ Inflammation TGLS = 5-6 ]

Spleen

Fibrosis Mild  
Leukemia Mononuclear

[ Fibrosis TGLS = 4-8 ]

[ Leukemia Mononuclear TGLS = 3-8 ]

PRIMARY CAUSE OF DEATH

- Spleen Leukemia Mononuclear

\* PROTOCOL REQUIRED TISSUE

**Experiment Number:** 88034-07

**Test Type:** CHRONIC

**Route:** SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY

**Species/Strain:** Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

**Test Compound:** Ozone/NNK

**CAS Number:** OZONNNKCOMB

**Date Report Requested:** 10/21/2014

**Time Report Requested:** 05:28:18

**First Dose M/F:** NA / NA

**Lab:** BNW

**ANIMAL ID:** 8437

**TRT#:** 3

**SEX:** Male

**DAY ON TEST:** 533

**DOSE:** 1 MG/KG NNK/AIR

**DISP:** Moribund Sacrifice

**HISTO:** 26321

**ORGAN AND ACCOUNTABLE SITE STATUS**

**NORMAL**

\* Larynx

\* Lymph Node, Mediastinal

\* Trachea

**MISSING**

\* Lymph Node, Bronchial

**OBSERVATIONS**

\* Lung

Mesentery

[ Necrosis TGLS = 1-7 ]

Fat

Alveolar/Bronchiolar Adenoma

Necrosis

Mild

\* Nose

Pituitary Gland

[ Adenoma TGLS = 2-7 ]

Olfactory Epi

Pars Distalis

Degeneration

Adenoma

Hyaline, Minimal

Skin

[ Inflammation TGLS = 3-6 ]

SOA, Subcut Tiss

Inflammation

Chronic, Minimal

**PRIMARY CAUSE OF DEATH**

- Pituitary Gland Pars Distalis Adenoma

\* PROTOCOL REQUIRED TISSUE

**Experiment Number:** 88034-07

**Test Type:** CHRONIC

**Route:** SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY

**Species/Strain:** Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

**Test Compound:** Ozone/NNK

**CAS Number:** OZONNNKCOMB

**Date Report Requested:** 10/21/2014

**Time Report Requested:** 05:28:18

**First Dose M/F:** NA / NA

**Lab:** BNW

**ANIMAL ID:** 8438

**TRT#:** 3

**SEX:** Male

**DAY ON TEST:** 489

**DOSE:** 1 MG/KG NNK/AIR

**DISP:** Natural Death

**HISTO:** 26322

**ORGAN AND ACCOUNTABLE SITE STATUS**

**NORMAL**

\* Larynx

\* Lymph Node, Bronchial

\* Lymph Node, Mediastinal

\* Trachea

**OBSERVATIONS**

\* Lung

Hemorrhage

Marked

\* Nose

Olfactory Epi

Degeneration

Hyaline, Minimal

Pancreas

Artery

Inflammation

Chronic, Minimal

[ Inflammation TGLS = 2-7 ]

Pituitary Gland

Pars Distalis

Adenoma

[ Adenoma TGLS = 1-7 ]

Skin

SOA, Subcut Tiss

Inflammation

Chronic, Minimal

[ Inflammation TGLS = 3-6 ]

**PRIMARY CAUSE OF DEATH**

- Pituitary Gland Pars Distalis Adenoma

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 88034-07

Test Type: CHRONIC

Route: SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY

Species/Strain: Rat/F 344/N

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Test Compound: Ozone/NNK

CAS Number: OZONNNKCOMB

Date Report Requested: 10/21/2014

Time Report Requested: 05:28:18

First Dose M/F: NA / NA

Lab: BNW

ANIMAL ID: 8439

TRT#: 3

SEX: Male

DAY ON TEST: 695

DOSE: 1 MG/KG NNK/AIR

DISP: Moribund Sacrifice

HISTO: 26323

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

\* Larynx

\* Lymph Node, Mediastinal

\* Trachea

MISSING

\* Lymph Node, Bronchial

OBSERVATIONS

Adrenal Cortex [ Vacuolization Cytoplasmic TGLS = 8-11 ]		Vacuolization Cytoplasmic	Moderate
Brain [ Hemorrhage TGLS = 3-9 ]		Hemorrhage	Minimal
Islets, Pancreatic [ Carcinoma TGLS = 12-12 ]		Carcinoma	
Kidney [ Nephropathy TGLS = 7-11 ]		Nephropathy	Marked
Liver [ Degeneration TGLS = 6-10 ]		Degeneration	Cystic, Mild
* Lung [ Hyperplasia TGLS = 14-8 ]	Alveolar Epith Alveolus	Hyperplasia Infiltration Cellular	Atypical, Mild Histiocyte, Mild
Lymph Node [ Infiltration Cellular TGLS = 9-12 ]	Renal Renal	Hemorrhage Infiltration Cellular	Moderate Plasma Cell, Moderate
Mammary Gland [ Galactocele TGLS = 1-13 ]		Galactocele	Marked
* Nose Peritoneum [ Inflammation TGLS = 10-6 ]	Olfactory Epi	Degeneration Inflammation	Hyaline, Minimal Chronic, Minimal
Pituitary Gland [ Adenoma TGLS = 2-9 ]	Pars Distalis	Adenoma	
Skin [ Inflammation TGLS = 11-7 ]	SOA, Subcut Tiss	Inflammation	Chronic, Minimal

\* PROTOCOL REQUIRED TISSUE

**Experiment Number:** 88034-07

**Test Type:** CHRONIC

**Route:** SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY

**Species/Strain:** Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

**Test Compound:** Ozone/NNK

**CAS Number:** OZONNNKCOMB

**Date Report Requested:** 10/21/2014

**Time Report Requested:** 05:28:18

**First Dose M/F:** NA / NA

**Lab:** BNW

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**ANIMAL ID:** 8439

**TRT#:** 3

**SEX:** Male

**DAY ON TEST:** 695

**DOSE:** 1 MG/KG NNK/AIR

**DISP:** Moribund Sacrifice

**HISTO:** 26323

---

**ORGAN AND ACCOUNTABLE SITE STATUS**

Testes

Interstitial Cell

Adenoma

[ Adenoma TGLS = 5-9 ]

Urinary Bladder

Hemorrhage

Moderate

Inflammation

Suppurative, Mild

Note: TGL #4 is a large blood clot in the bladder.

[ Hemorrhage TGLS = 4-10 ]

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**PRIMARY CAUSE OF DEATH**

- Pituitary Gland Pars Distalis Adenoma

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\* PROTOCOL REQUIRED TISSUE

**Experiment Number:** 88034-07

**Test Type:** CHRONIC

**Route:** SUBCUTANEOUS|RESPIRATORY  
**EXPOSURE** WHOLE BODY

**Species/Strain:** Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

**Test Compound:** Ozone/NNK

**CAS Number:** OZONNNKCOMB

**Date Report Requested:** 10/21/2014

**Time Report Requested:** 05:28:18

**First Dose M/F:** NA / NA

**Lab:** BNW

**ANIMAL ID:** 8440

**TRT#:** 3

**SEX:** Male

**DAY ON TEST:** 488

**DOSE:** 1 MG/KG NNK/AIR

**DISP:** Moribund Sacrifice

**HISTO:** 26324

**ORGAN AND ACCOUNTABLE SITE STATUS**

**NORMAL**

\* Larynx

\* Trachea

**OBSERVATIONS**

Liver		Hepatodiaphragmatic Nodule Leukemia Mononuclear	
[ Hepatodiaphragmatic Nodule TGLS = 11-8 ]			
[ Leukemia Mononuclear TGLS = 5-8 ]			
* Lung		Leukemia Mononuclear	
Lymph Node	Iliac	Leukemia Mononuclear	
	Pancreatic	Leukemia Mononuclear	
	Renal	Leukemia Mononuclear	
		Leukemia Mononuclear	
Note: TGL 14 involves the axillary lymph node.			
[ Leukemia Mononuclear TGLS = 12-9 ]			
[ Leukemia Mononuclear TGLS = 14-14 ]			
[ Leukemia Mononuclear TGLS = 9-12 ]			
[ Leukemia Mononuclear TGLS = 7-11 ]			
* Lymph Node, Bronchial		Leukemia Mononuclear	
Lymph Node, Mandibular		Leukemia Mononuclear	
[ Leukemia Mononuclear TGLS = 1-7 ]			
* Lymph Node, Mediastinal		Leukemia Mononuclear	
[ Leukemia Mononuclear TGLS = 2-2 ]			
Lymph Node, Mesenteric		Leukemia Mononuclear	
[ Leukemia Mononuclear TGLS = 16-15 ]			
Mesentery	Fat	Necrosis	Mild
[ Necrosis TGLS = 6-8 ]			
* Nose	Olfactory Epi	Degeneration	Hyaline, Minimal
Peritoneum		Inflammation	Chronic, Minimal
[ Inflammation TGLS = 13-13 ]			
Pituitary Gland	Pars Distalis	Hyperplasia	Moderate

\* PROTOCOL REQUIRED TISSUE

**Experiment Number:** 88034-07

**Test Type:** CHRONIC

**Route:** SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY

**Species/Strain:** Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

**Test Compound:** Ozone/NNK

**CAS Number:** OZONNNKCOMB

**Date Report Requested:** 10/21/2014

**Time Report Requested:** 05:28:18

**First Dose M/F:** NA / NA

**Lab:** BNW

**ANIMAL ID:** 8440

**TRT#:** 3

**SEX:** Male

**DAY ON TEST:** 488

**DOSE:** 1 MG/KG NNK/AIR

**DISP:** Moribund Sacrifice

**HISTO:** 26324

**ORGAN AND ACCOUNTABLE SITE STATUS**

[ Hyperplasia TGLS = 3-7 ] Preputial Gland		Inflammation	Chronic Active, Marked
[ Inflammation TGLS = 4-10 ] Skin	SOA, Subcut Tiss	Inflammation	Chronic, Minimal
[ Inflammation TGLS = 15-6 ] Spleen		Accessory Spleen Leukemia Mononuclear	
[ Accessory Spleen TGLS = 10-9 ] [ Leukemia Mononuclear TGLS = 8-7 ]			

**PRIMARY CAUSE OF DEATH**

- Spleen Leukemia Mononuclear

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 88034-07

Test Type: CHRONIC

Route: SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY

Species/Strain: Rat/F 344/N

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Test Compound: Ozone/NNK

CAS Number: OZONNNKCOMB

Date Report Requested: 10/21/2014

Time Report Requested: 05:28:18

First Dose M/F: NA / NA

Lab: BNW

ANIMAL ID: 8441

TRT#: 3

SEX: Male

DAY ON TEST: 677

DOSE: 1 MG/KG NNK/AIR

DISP: Moribund Sacrifice

HISTO: 26325

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

\* Larynx

\* Nose

\* Trachea

MISSING

\* Lymph Node, Bronchial

OBSERVATIONS

Adrenal Medulla [ Pheochromocytoma Benign TGLS = 5-11 ]		Pheochromocytoma Benign	
Kidney [ Nephropathy TGLS = 6-10 ]		Nephropathy	Marked
Liver [ Leukemia Mononuclear TGLS = 4-12 ]		Degeneration Leukemia Mononuclear	Cystic, Moderate
* Lung [ Hyperplasia TGLS = 10-3 ]	Alveolar Epith	Alveolar/Bronchiolar Adenoma Hyperplasia	Atypical, Mild
Lymph Node [ Infiltration Cellular TGLS = 7-9 ]	Renal	Infiltration Cellular	Plasma Cell, Mild
* Lymph Node, Mediastinal		Leukemia Mononuclear	
Peritoneum [ Inflammation TGLS = 8-7 ]		Inflammation	Chronic, Minimal
Skin Note: TGL #1 is moderate hyperkeratosis of the skin of the tail. [ Hyperkeratosis TGLS = 1-6 ] [ Inflammation TGLS = 9-8 ]	SOA, Subcut Tiss	Hyperkeratosis Inflammation	Moderate Chronic, Minimal
Spleen [ Fibrosis TGLS = 11-11 ] [ Leukemia Mononuclear TGLS = 3-11 ]		Fibrosis Leukemia Mononuclear	Mild
Testes	Interstit Cell	Adenoma	

\* PROTOCOL REQUIRED TISSUE



**Experiment Number:** 88034-07

**Test Type:** CHRONIC

**Route:** SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY

**Species/Strain:** Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

**Test Compound:** Ozone/NNK

**CAS Number:** OZONNNKCOMB

**Date Report Requested:** 10/21/2014

**Time Report Requested:** 05:28:18

**First Dose M/F:** NA / NA

**Lab:** BNW

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**ANIMAL ID:** 8441

**TRT#:** 3

**SEX:** Male

**DAY ON TEST:** 677

**DOSE:** 1 MG/KG NNK/AIR

**DISP:** Moribund Sacrifice

**HISTO:** 26325

---

**ORGAN AND ACCOUNTABLE SITE STATUS**

---

[ Adenoma TGLS = 2-9 ]

---

**PRIMARY CAUSE OF DEATH**

- Spleen Leukemia Mononuclear

---

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 88034-07

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Date Report Requested: 10/21/2014

Test Type: CHRONIC

Test Compound: Ozone/NNK

Time Report Requested: 05:28:18

Route: SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY

CAS Number: OZONNNKCOMB

First Dose M/F: NA / NA

Species/Strain: Rat/F 344/N

Lab: BNW

ANIMAL ID: 8442

TRT#: 3

SEX: Male

DAY ON TEST: 683

DOSE: 1 MG/KG NNK/AIR

DISP: Moribund Sacrifice

HISTO: 26326

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

\* Larynx

\* Lymph Node, Mediastinal

\* Trachea

OBSERVATIONS

Kidney

Leukemia Mononuclear  
Nephropathy

Moderate

[ Leukemia Mononuclear TGLS = 8-9 ]

Liver

Leukemia Mononuclear

[ Leukemia Mononuclear TGLS = 7,10-7 ]

\* Lung

Alveolar Epith  
Alveolus

Hyperplasia  
Infiltration Cellular  
Leukemia Mononuclear

Atypical, Mild  
Histiocyte, Mild

\* Lymph Node, Bronchial

\* Nose

Olfactory Epi  
Pars Distalis

Degeneration  
Adenoma

Hyaline, Mild

Pituitary Gland

[ Adenoma TGLS = 1-10 ]

Preputial Gland

Inflammation

Chronic Active, Mild

[ Inflammation TGLS = 2-7 ]

Skin

SOA, Subcut Tiss

Inflammation

Chronic, Minimal

[ Inflammation TGLS = 9-6 ]

Spleen

Fibrosis  
Leukemia Mononuclear

Moderate

[ Fibrosis TGLS = 6-8 ]

[ Leukemia Mononuclear TGLS = 5-8 ]

Testes

Interstit Cell

Adenoma  
Atrophy

Marked

[ Adenoma TGLS = 3-7 ]

[ Atrophy TGLS = 4-7 ]

PRIMARY CAUSE OF DEATH

- Spleen Leukemia Mononuclear

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 88034-07

Test Type: CHRONIC

Route: SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY

Species/Strain: Rat/F 344/N

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Test Compound: Ozone/NNK

CAS Number: OZONNNKCOMB

Date Report Requested: 10/21/2014

Time Report Requested: 05:28:18

First Dose M/F: NA / NA

Lab: BNW

ANIMAL ID: 8443

TRT#: 3

SEX: Male

DAY ON TEST: 605

DOSE: 1 MG/KG NNK/AIR

DISP: Moribund Sacrifice

HISTO: 26327

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

\* Larynx \* Trachea

OBSERVATIONS

Liver		Leukemia Mononuclear	
[ Leukemia Mononuclear TGLS = 5-8 ]			
* Lung		Fibrosis	Focal, Moderate
	Alveolar Epith	Hyperplasia	Atypical, Moderate
		Leukemia Mononuclear	
[ Leukemia Mononuclear TGLS = 1-3 ]			
* Lymph Node, Bronchial		Leukemia Mononuclear	
* Lymph Node, Mediastinal		Leukemia Mononuclear	
* Nose	Olfactory Epi	Degeneration	Hyaline, Minimal
Peritoneum		Inflammation	Chronic, Minimal
[ Inflammation TGLS = 6-7 ]			
Pituitary Gland	Pars Distalis	Adenoma	
[ Adenoma TGLS = 2-8 ]			
Preputial Gland		Inflammation	Chronic Active, Mild
[ Inflammation TGLS = 3-8 ]			
Skin	SOA, Subcut Tiss	Inflammation	Chronic, Minimal
[ Inflammation TGLS = 7-6 ]			
Spleen		Leukemia Mononuclear	
[ Leukemia Mononuclear TGLS = 4-9 ]			

PRIMARY CAUSE OF DEATH - Spleen Leukemia Mononuclear

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 88034-07

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Date Report Requested: 10/21/2014

Test Type: CHRONIC

Test Compound: Ozone/NNK

Time Report Requested: 05:28:18

Route: SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY

CAS Number: OZONNNKCOMB

First Dose M/F: NA / NA

Species/Strain: Rat/F 344/N

Lab: BNW

ANIMAL ID: 8444

TRT#: 3

SEX: Male

DAY ON TEST: 583

DOSE: 1 MG/KG NNK/AIR

DISP: Moribund Sacrifice

HISTO: 26328

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

\* Larynx

Stomach, Glandular

\* Trachea

OBSERVATIONS

Liver

[ Leukemia Mononuclear TGLS = 6,7-9+10 ]

Leukemia Mononuclear

\* Lung

Alveolar Epith

Hemorrhage

Mild

Hyperplasia

Atypical, Mild

Leukemia Mononuclear

Squamous Cell Carcinoma

[ Hemorrhage TGLS = 1-3 ]

[ Squamous Cell Carcinoma TGLS = 9-3 ]

Lymph Node

Pancreatic

Leukemia Mononuclear

Renal

Leukemia Mononuclear

[ Leukemia Mononuclear TGLS = 8-12 ]

[ Leukemia Mononuclear TGLS = 4-11 ]

\* Lymph Node, Bronchial

Leukemia Mononuclear

\* Lymph Node, Mediastinal

Leukemia Mononuclear

\* Nose

Olfactory Epi

Degeneration

Hyaline, Moderate

Olfactory Epi

Metaplasia

Mild

Skin

SOA, Subcut Tiss

Inflammation

Chronic, Minimal

[ Inflammation TGLS = 10-6 ]

Spleen

Leukemia Mononuclear

[ Leukemia Mononuclear TGLS = 2,3-7+8 ]

Stom Gland

Note: No microscopic lesion corresponding to TGL #5 was observed. This may have been due to an accidental cut through the serosa during necropsy.

PRIMARY CAUSE OF DEATH

- Spleen Leukemia Mononuclear

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 88034-07

Test Type: CHRONIC

Route: SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY

Species/Strain: Rat/F 344/N

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Test Compound: Ozone/NNK

CAS Number: OZONNNKCOMB

Date Report Requested: 10/21/2014

Time Report Requested: 05:28:18

First Dose M/F: NA / NA

Lab: BNW

ANIMAL ID: 8445

TRT#: 3

SEX: Male

DAY ON TEST: 669

DOSE: 1 MG/KG NNK/AIR

DISP: Moribund Sacrifice

HISTO: 26329

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

\* Larynx \* Trachea

OBSERVATIONS

Liver		Leukemia Mononuclear	
[ Leukemia Mononuclear TGLS = 5,6-9 ]			
* Lung	Alveolar Epith	Alveolar/Bronchiolar Adenoma Hyperplasia	Atypical, Mild
[ Alveolar/Bronchiolar Adenoma TGLS = 9-8 ]			
[ Hyperplasia TGLS = 9-8+3 ]			
* Lymph Node, Bronchial		Leukemia Mononuclear	
* Lymph Node, Mediastinal		Leukemia Mononuclear	
* Nose	Olfactory Epi	Degeneration	Hyaline, Mild
Peritoneum		Inflammation	Chronic, Minimal
[ Inflammation TGLS = 7-7 ]			
Skin	SOA, Subcut Tiss	Inflammation	Chronic, Minimal
[ Inflammation TGLS = 8-6 ]			
Spleen		Leukemia Mononuclear Necrosis	Moderate
[ Leukemia Mononuclear TGLS = 2,4-8 ]			
[ Necrosis TGLS = 3-8 ]			
Testes	Interstit Cell	Adenoma	
[ Adenoma TGLS = 1-8 ]			

PRIMARY CAUSE OF DEATH - Spleen Leukemia Mononuclear

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 88034-07

Test Type: CHRONIC

Route: SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY

Species/Strain: Rat/F 344/N

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Test Compound: Ozone/NNK

CAS Number: OZONNNKCOMB

Date Report Requested: 10/21/2014

Time Report Requested: 05:28:18

First Dose M/F: NA / NA

Lab: BNW

ANIMAL ID: 8446

TRT#: 3

SEX: Male

DAY ON TEST: 550

DOSE: 1 MG/KG NNK/AIR

DISP: Moribund Sacrifice

HISTO: 26330

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

\* Larynx \* Trachea

OBSERVATIONS

Kidney		Infarct	Moderate
		Leukemia Mononuclear	
		Nephropathy	Moderate
[ Infarct TGLS = 5-8 ]			
Liver		Leukemia Mononuclear	
[ Leukemia Mononuclear TGLS = 8-9 ]			
* Lung		Leukemia Mononuclear	
Lymph Node	Pancreatic	Leukemia Mononuclear	
	Renal	Leukemia Mononuclear	
[ Leukemia Mononuclear TGLS = 4-8 ]			
[ Leukemia Mononuclear TGLS = 6-8 ]			
* Lymph Node, Bronchial		Leukemia Mononuclear	
* Lymph Node, Mediastinal		Leukemia Mononuclear	
Lymph Node, Mesenteric		Leukemia Mononuclear	
[ Leukemia Mononuclear TGLS = 10-8 ]			
* Nose	Olfactory Epi	Degeneration	Hyaline, Minimal
Peritoneum		Inflammation	Chronic, Minimal
[ Inflammation TGLS = 7-10 ]			
Skin	SOA, Subcut Tiss	Inflammation	Chronic, Minimal
[ Inflammation TGLS = 9-6 ]			
Spleen		Leukemia Mononuclear	
		Necrosis	Marked
[ Leukemia Mononuclear TGLS = 1-7 ]			
[ Necrosis TGLS = 2,3-7 ]			

PRIMARY CAUSE OF DEATH - Spleen Leukemia Mononuclear

\* PROTOCOL REQUIRED TISSUE

**Experiment Number:** 88034-07

**Test Type:** CHRONIC

**Route:** SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY

**Species/Strain:** Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

**Test Compound:** Ozone/NNK

**CAS Number:** OZONNNKCOMB

**Date Report Requested:** 10/21/2014

**Time Report Requested:** 05:28:18

**First Dose M/F:** NA / NA

**Lab:** BNW

**ANIMAL ID:** 8447

**TRT#:** 3

**SEX:** Male

**DAY ON TEST:** 583

**DOSE:** 1 MG/KG NNK/AIR

**DISP:** Moribund Sacrifice

**HISTO:** 26331

**ORGAN AND ACCOUNTABLE SITE STATUS**

**NORMAL**

\* Larynx

\* Trachea

**MISSING**

\* Lymph Node, Bronchial

\* Lymph Node, Mediastinal

**OBSERVATIONS**

\* Lung

Alveolar Epith  
Hemorrhage  
Hyperplasia

Mild  
Atypical, Moderate

[ Hemorrhage TGLS = 1-3 ]

\* Nose

Olfactory Epi  
Pars Distalis  
Degeneration  
Adenoma

Hyaline, Mild

Pituitary Gland

[ Adenoma TGLS = 2-7 ]

Skin

SOA, Subcut Tiss  
Inflammation

Chronic, Minimal

[ Inflammation TGLS = 3-6 ]

**PRIMARY CAUSE OF DEATH**

- Pituitary Gland Pars Distalis Adenoma

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 88034-07

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Date Report Requested: 10/21/2014

Test Type: CHRONIC

Test Compound: Ozone/NNK

Time Report Requested: 05:28:18

Route: SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY

CAS Number: OZONNNKCOMB

First Dose M/F: NA / NA

Species/Strain: Rat/F 344/N

Lab: BNW

ANIMAL ID: 8448

TRT#: 3

SEX: Male

DAY ON TEST: 641

DOSE: 1 MG/KG NNK/AIR

DISP: Moribund Sacrifice

HISTO: 26332

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

\* Larynx

\* Lymph Node, Mediastinal

Penis

\* Trachea

MISSING

\* Lymph Node, Bronchial

OBSERVATIONS

\* Lung

Alveolar/Bronchiolar Adenoma

Congestion

Minimal

Alveolar Epith

Hyperplasia

Atypical, Moderate

Alveolus

Infiltration Cellular

Histiocyte, Moderate

[ Congestion TGLS = 2-3 ]

\* Nose

Olfactory Epi

Degeneration

Hyaline, Minimal

Nasopharyn Dct

Infiltration Cellular

Mixed Cell, Mild

Penis

Note: No microscopic lesion corresponding to TGL #1 (penis, enlarged,8mm dia.) was observed. The gross change was probably due to edema.

Peritoneum

Inflammation

Chronic, Minimal

[ Inflammation TGLS = 4-7 ]

Pituitary Gland

Pars Distalis

Adenoma

[ Adenoma TGLS = 3-8 ]

Skin

SOA, Subcut Tiss

Inflammation

Chronic, Minimal

[ Inflammation TGLS = 5-6 ]

PRIMARY CAUSE OF DEATH

- Pituitary Gland Pars Distalis Adenoma

\* PROTOCOL REQUIRED TISSUE



Experiment Number: 88034-07

Test Type: CHRONIC

Route: SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY

Species/Strain: Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

Test Compound: Ozone/NNK

CAS Number: OZONNNKCOMB

Date Report Requested: 10/21/2014

Time Report Requested: 05:28:18

First Dose M/F: NA / NA

Lab: BNW

ANIMAL ID: 8601

TRT#: 4

SEX: Male

DAY ON TEST: 725

DOSE: TRIOCT./OZONE

DISP: Moribund Sacrifice

HISTO: 26333

**ORGAN AND ACCOUNTABLE SITE STATUS**

**NORMAL**

\* Larynx \* Trachea

**MISSING**

\* Lymph Node, Bronchial

**OBSERVATIONS**

Liver		Leukemia Mononuclear	
[ Leukemia Mononuclear TGLS = 5-9 ]			
* Lung		Leukemia Mononuclear	
* Lymph Node, Mediastinal		Leukemia Mononuclear	
* Nose	Olfactory Epi	Degeneration	Hyaline, Mild
	Goblet Cell, Lateral Wall	Hyperplasia	Minimal
	Lateral Wall	Hyperplasia	Minimal
Pituitary Gland	Pars Distalis	Adenoma	
[ Adenoma TGLS = 2-9 ]			
Skin	SOA, Subcut Tiss	Inflammation	Chronic, Minimal
	SOA, Subcut Tiss	Sarcoma	
[ Inflammation TGLS = 6-6 ]			
[ Sarcoma TGLS = 7-7 ]			
Spleen		Leukemia Mononuclear	
[ Leukemia Mononuclear TGLS = 4-9 ]			
Testes	Interstit Cell	Adenoma	
[ Adenoma TGLS = 3,9-9 ]			
Thyroid Gland	Follicular Cel	Hyperplasia	Moderate
[ Hyperplasia TGLS = 1-8 ]			

PRIMARY CAUSE OF DEATH - Spleen Leukemia Mononuclear

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 88034-07

Test Type: CHRONIC

Route: SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY

Species/Strain: Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

Test Compound: Ozone/NNK

CAS Number: OZONNNKCOMB

Date Report Requested: 10/21/2014

Time Report Requested: 05:28:18

First Dose M/F: NA / NA

Lab: BNW

ANIMAL ID: 8602

TRT#: 4

SEX: Male

DAY ON TEST: 556

DOSE: TRIOCT./OZONE

DISP: Moribund Sacrifice

HISTO: 26334

**ORGAN AND ACCOUNTABLE SITE STATUS**

**NORMAL**

\* Trachea

**MISSING**

\* Lymph Node, Bronchial

**INSUFFICIENT TISSUE**

\* Lymph Node, Mediastinal

**OBSERVATIONS**

* Larynx		Foreign Body Inflammation	Suppurative, Mild
Note: Foreign body in larynx is plant material and mineralized debris. Mild inflammation present.			
* Lung	Interstitium Alveolar Epith	Fibrosis Metaplasia	Minimal Minimal
* Nose	Olfactory Epi	Degeneration	Hyaline, Mild
Pituitary Gland	Pars Distalis	Adenoma	
[ Adenoma TGLS = 3-9 ]			
Skin	SOA, Subcut Tiss SOA, Subcut Tiss	Inflammation Sarcoma	Chronic, Minimal
[ Inflammation TGLS = 2-6 ]			
[ Sarcoma TGLS = 1-7+8 ]			
Testes	Interstit Cell	Adenoma	
[ Adenoma TGLS = 4-9 ]			

PRIMARY CAUSE OF DEATH - Skin SOA Subcut Tiss Sarcoma

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 88034-07

Test Type: CHRONIC

Route: SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY

Species/Strain: Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

Test Compound: Ozone/NNK

CAS Number: OZONNNKCOMB

Date Report Requested: 10/21/2014

Time Report Requested: 05:28:18

First Dose M/F: NA / NA

Lab: BNW

ANIMAL ID: 8603

TRT#: 4

SEX: Male

DAY ON TEST: 603

DOSE: TRIOCT./OZONE

DISP: Moribund Sacrifice

HISTO: 26335

**ORGAN AND ACCOUNTABLE SITE STATUS**

**NORMAL**

\* Larynx

\* Trachea

**MISSING**

\* Lymph Node, Bronchial

**OBSERVATIONS**

* Lung	Interstitial Alveolar Epith	Fibrosis Metaplasia	Minimal Minimal
* Lymph Node, Mediastinal		Hemorrhage Infiltration Cellular	Moderate Plasma Cell, Mild
Mesentery [ Sarcoma TGLS = 5-7 ]		Sarcoma	Metastatic (Tissue Nos)
* Nose	Olfactory Epi Lateral Wall	Degeneration Hyperplasia	Hyaline, Mild Minimal
Pituitary Gland [ Adenoma TGLS = 2-7 ]	Pars Distalis	Adenoma	
Skin [ Inflammation TGLS = 6-6 ]	SOA, Subcut Tiss	Inflammation	Chronic, Minimal
Testes [ Necrosis TGLS = 3-7 ]		Necrosis	Marked
Tissue NOS Note: TGL #4 does not involve kidney. It is an anaplastic sarcoma in adjacent tissue. Diagnosis of "Sarcoma" not available for peritoneum. [ Sarcoma TGLS = 4-8 ]		Sarcoma	

**PRIMARY CAUSE OF DEATH**

- Tissue NOS Sarcoma

Animal Note: Site of anaplastic sarcoma in retroperitoneum is similar to site of chronic inflammation due to injected trioctanoin in many other rats in this study.

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 88034-07

Test Type: CHRONIC

Route: SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY

Species/Strain: Rat/F 344/N

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Test Compound: Ozone/NNK

CAS Number: OZONNNKCOMB

Date Report Requested: 10/21/2014

Time Report Requested: 05:28:18

First Dose M/F: NA / NA

Lab: BNW

ANIMAL ID: 8604

TRT#: 4

SEX: Male

DAY ON TEST: 458

DOSE: TRIOCT./OZONE

DISP: Moribund Sacrifice

HISTO: 26336

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

\* Larynx \* Trachea

OBSERVATIONS

Kidney		Leukemia Mononuclear	
[ Leukemia Mononuclear TGLS = 4-8 ]			
* Lung	Interstitial	Fibrosis	Minimal
	Alveolar Epith	Leukemia Mononuclear	
[ Leukemia Mononuclear TGLS = 6-3 ]		Metaplasia	Minimal
* Lymph Node, Bronchial		Leukemia Mononuclear	
* Lymph Node, Mediastinal		Leukemia Mononuclear	
* Nose	Olfactory Epi	Degeneration	Hyaline, Mild
	Lateral Wall	Hyperplasia	Minimal
Pancreas		Leukemia Mononuclear	
[ Leukemia Mononuclear TGLS = 3-7 ]			
Skin	SOA, Subcut Tiss	Inflammation	Chronic, Minimal
[ Inflammation TGLS = 5-6 ]			
Spleen		Leukemia Mononuclear	
[ Leukemia Mononuclear TGLS = 2-7 ]			
Thymus		Leukemia Mononuclear	
[ Leukemia Mononuclear TGLS = 1-2 ]			

PRIMARY CAUSE OF DEATH - Spleen Leukemia Mononuclear

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 88034-07

Test Type: CHRONIC

Route: SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY

Species/Strain: Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

Test Compound: Ozone/NNK

CAS Number: OZONNNKCOMB

Date Report Requested: 10/21/2014

Time Report Requested: 05:28:18

First Dose M/F: NA / NA

Lab: BNW

ANIMAL ID: 8605

TRT#: 4

SEX: Male

DAY ON TEST: 440

DOSE: TRIOCT./OZONE

DISP: Natural Death

HISTO: 26337

**ORGAN AND ACCOUNTABLE SITE STATUS**

**NORMAL**

\* Larynx

\* Lung

\* Trachea

**OBSERVATIONS**

\* Lung

Note: Lung is slightly autolytic by otherwise normal. Metastatic sarcoma was coded for pleura and involves no other pulmonary tissue.

\* Lymph Node, Bronchial

Hemorrhage

Mild

\* Lymph Node, Mediastinal

Hemorrhage

Moderate

\* Nose

Olfactory Epi

Degeneration

Hyaline, Mild

Pleura

Sarcoma

Metastatic (Tissue Nos)

[ Sarcoma TGLS = 2-9+10 ]

Skin

SOA, Subcut Tiss

Inflammation

Chronic, Minimal

[ Inflammation TGLS = 3-6 ]

Tissue NOS

Sarcoma

Note: Sarcoma (TGL 1) appeared to involve tissues in thoracic cavity primarily. However it probably originated in subcutaneous injection sites.

[ Sarcoma TGLS = 1-7+8 ]

PRIMARY CAUSE OF DEATH

- Tissue NOS Sarcoma

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 88034-07

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Date Report Requested: 10/21/2014

Test Type: CHRONIC

Test Compound: Ozone/NNK

Time Report Requested: 05:28:18

Route: SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY

CAS Number: OZONNNKCOMB

First Dose M/F: NA / NA

Species/Strain: Rat/F 344/N

Lab: BNW

ANIMAL ID: 8606

TRT#: 4

SEX: Male

DAY ON TEST: 636

DOSE: TRIOCT./OZONE

DISP: Natural Death

HISTO: 26338

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

\* Larynx \* Trachea

OBSERVATIONS

Liver		Leukemia Mononuclear	
[ Leukemia Mononuclear TGLS = 2,3-8+9 ]			
* Lung		Leukemia Mononuclear	
[ Leukemia Mononuclear TGLS = 8-3 ]			
* Lymph Node, Bronchial		Leukemia Mononuclear	
* Lymph Node, Mediastinal		Leukemia Mononuclear	
[ Leukemia Mononuclear TGLS = 1-2 ]			
* Nose	Olfactory Epi	Degeneration	Hyaline, Mild
	Goblet Cell, Lateral Wall	Hyperplasia	Minimal
	Lateral Wall	Hyperplasia	Minimal
Peritoneum		Inflammation	Chronic, Minimal
[ Inflammation TGLS = 5-6 ]			
Skin	SOA, Subcut Tiss	Inflammation	Chronic, Minimal
[ Inflammation TGLS = 7-7 ]			
Spleen		Leukemia Mononuclear	
[ Leukemia Mononuclear TGLS = 4-9 ]			
Tissue NOS		Sarcoma	
Note: TGL #6 is a sarcoma in retroperitoneal tissue rather than in mesentery as indicated on IANR Form.			
[ Sarcoma TGLS = 6-9 ]			

PRIMARY CAUSE OF DEATH - Spleen Leukemia Mononuclear

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 88034-07

Test Type: CHRONIC

Route: SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY

Species/Strain: Rat/F 344/N

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Test Compound: Ozone/NNK

CAS Number: OZONNNKCOMB

Date Report Requested: 10/21/2014

Time Report Requested: 05:28:18

First Dose M/F: NA / NA

Lab: BNW

ANIMAL ID: 8607

TRT#: 4

SEX: Male

DAY ON TEST: 669

DOSE: TRIOCT./OZONE

DISP: Moribund Sacrifice

HISTO: 26339

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

\* Larynx

\* Lymph Node, Mediastinal

\* Trachea

OBSERVATIONS

\* Lung

Interstitialium

Fibrosis

Minimal

Leukemia Mononuclear

Alveolar Epith

Metaplasia

Minimal

\* Lymph Node, Bronchial

Leukemia Mononuclear

\* Nose

Olfactory Epi

Degeneration

Hyaline, Mild

Lateral Wall

Hyperplasia

Minimal

Inflammation

Suppurative, Mild

Inflammation

Chronic, Minimal

Peritoneum

[ Inflammation TGLS = 5-6 ]

Pituitary Gland

Pars Distalis

Adenoma

[ Adenoma TGLS = 1-8 ]

Prostate

Inflammation

Suppurative, Mild

Note: TGL #3 is edema and suppurative inflammation in the prostate and adjacent fatty tissue.

[ Inflammation TGLS = 3-9 ]

Skin

SOA, Subcut Tiss

Inflammation

Chronic, Minimal

Keratoacanthoma

[ Inflammation TGLS = 6-7 ]

[ Keratoacanthoma TGLS = 7-9 ]

Spleen

Leukemia Mononuclear

[ Leukemia Mononuclear TGLS = 2-8 ]

Testes

Atrophy

Mild

[ Atrophy TGLS = 4-8 ]

PRIMARY CAUSE OF DEATH

- Spleen Leukemia Mononuclear

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 88034-07

Test Type: CHRONIC

Route: SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY

Species/Strain: Rat/F 344/N

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Test Compound: Ozone/NNK

CAS Number: OZONNNKCOMB

Date Report Requested: 10/21/2014

Time Report Requested: 05:28:18

First Dose M/F: NA / NA

Lab: BNW

ANIMAL ID: 8608

TRT#: 4

SEX: Male

DAY ON TEST: 502

DOSE: TRIOCT./OZONE

DISP: Moribund Sacrifice

HISTO: 26340

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

\* Larynx

Preputial Gland

\* Trachea

MISSING

\* Lymph Node, Bronchial

OBSERVATIONS

Kidney

Note: No lesion corresponding to TGL 7 was found at trim. Therefore no section of kidney was taken since kidney is not a protocol required tissue.

Note: TGL #7, 1mm white nodule on left kidney not seen at trim. Wet tissue re-checked 5/4/92; no nodule seen. Therefore no section was taken.

\* Lung

Interstitium

Fibrosis

Minimal

Leukemia Mononuclear

Alveolar Epith

Metaplasia

Minimal

[ Leukemia Mononuclear TGLS = 1-3 ]

\* Lymph Node, Mediastinal

Leukemia Mononuclear

Mammary Gland

Galactoceles

Moderate

[ Galactoceles TGLS = 3-8 ]

Mesentery

Fat

Necrosis

Moderate

[ Necrosis TGLS = 4,5-11+7 ]

\* Nose

Olfactory Epi

Degeneration

Hyaline, Moderate

Goblet Cell, Lateral Wall

Hyperplasia

Minimal

Lateral Wall

Hyperplasia

Minimal

Pituitary Gland

Pars Distalis

Adenoma

[ Adenoma TGLS = 2-9 ]

Preputial GI

Note: Preputial gland is normal. TGL 3 recorded for preputial gland is a galactocoele in adjacent mammary tissue coded under mammary gland.

Skin

SOA, Subcut Tiss

Inflammation

Chronic, Minimal

Keratoacanthoma

[ Inflammation TGLS = 9-6 ]

[ Keratoacanthoma TGLS = 8-10 ]

Spleen

Leukemia Mononuclear

[ Leukemia Mononuclear TGLS = 6-9 ]

\* PROTOCOL REQUIRED TISSUE



**Experiment Number:** 88034-07

**Test Type:** CHRONIC

**Route:** SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY

**Species/Strain:** Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

**Test Compound:** Ozone/NNK

**CAS Number:** OZONNNKCOMB

**Date Report Requested:** 10/21/2014

**Time Report Requested:** 05:28:18

**First Dose M/F:** NA / NA

**Lab:** BNW

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**ANIMAL ID:** 8608

**TRT#:** 4

**SEX:** Male

**DAY ON TEST:** 502

**DOSE:** TRIOCT./OZONE

**DISP:** Moribund Sacrifice

**HISTO:** 26340

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**ORGAN AND ACCOUNTABLE SITE STATUS**

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**PRIMARY CAUSE OF DEATH**

- Pituitary Gland Pars Distalis Adenoma

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\* PROTOCOL REQUIRED TISSUE

Experiment Number: 88034-07

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Date Report Requested: 10/21/2014

Test Type: CHRONIC

Test Compound: Ozone/NNK

Time Report Requested: 05:28:18

Route: SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY

CAS Number: OZONNNKCOMB

First Dose M/F: NA / NA

Species/Strain: Rat/F 344/N

Lab: BNW

ANIMAL ID: 8609

TRT#: 4

SEX: Male

DAY ON TEST: 678

DOSE: TRIOCT./OZONE

DISP: Moribund Sacrifice

HISTO: 26341

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

\* Larynx

\* Lymph Node, Bronchial

\* Trachea

MISSING

Pituitary Gland

OBSERVATIONS

Kidney		Nephropathy	Moderate
[ Nephropathy TGLS = 4-10 ]			
Liver		Leukemia Mononuclear	
[ Leukemia Mononuclear TGLS = 5-8 ]			
* Lung	Interstitial	Fibrosis	Minimal
	Alveolus	Infiltration Cellular	Histiocyte, Minimal
	Alveolar Epith	Metaplasia	Minimal
* Lymph Node, Mediastinal		Leukemia Mononuclear	
* Nose	Olfactory Epi	Degeneration	Hyaline, Mild
	Goblet Cell, Lateral Wall	Hyperplasia	Minimal
	Lateral Wall	Hyperplasia	Mild
Peritoneum		Inflammation	Chronic, Minimal
[ Inflammation TGLS = 8-7 ]			
Pituitary Gl			
Note: Pituitary gland was not found at trim and a check of wet tissues after embedding failed to find it.		It was apparently lost.	
Skin	SOA, Subcut Tiss	Inflammation	Chronic, Minimal
		Keratoacanthoma	
[ Inflammation TGLS = 7-6 ]			
[ Keratoacanthoma TGLS = 6-11 ]			
Spleen		Leukemia Mononuclear	
[ Leukemia Mononuclear TGLS = 3-9 ]			
Testes	Interstit Cell	Adenoma	
[ Adenoma TGLS = 2-8 ]			

PRIMARY CAUSE OF DEATH - Spleen Leukemia Mononuclear

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 88034-07

Test Type: CHRONIC

Route: SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY

Species/Strain: Rat/F 344/N

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Test Compound: Ozone/NNK

CAS Number: OZONNNKCOMB

Date Report Requested: 10/21/2014

Time Report Requested: 05:28:18

First Dose M/F: NA / NA

Lab: BNW

ANIMAL ID: 8610

TRT#: 4

SEX: Male

DAY ON TEST: 673

DOSE: TRIOCT./OZONE

DISP: Moribund Sacrifice

HISTO: 26342

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

\* Larynx

\* Lymph Node, Bronchial

\* Lymph Node, Mediastinal

\* Trachea

OBSERVATIONS

Liver

Degeneration

Cystic, Mild

Vacuolization Cytoplasmic

Mild

[ Degeneration TGLS = 4-10 ]

\* Lung

Interstitial

Fibrosis

Minimal

Alveolar Epith

Metaplasia

Minimal

\* Nose

Olfactory Epi

Degeneration

Hyaline, Mild

Goblet Cell, Lateral Wall

Hyperplasia

Minimal

Lateral Wall

Hyperplasia

Minimal

Peritoneum

Inflammation

Chronic, Minimal

[ Inflammation TGLS = 6-6 ]

Pituitary Gland

Pars Distalis

Adenoma

[ Adenoma TGLS = 1-8 ]

Preputial Gland

Inflammation

Chronic Active, Mild

[ Inflammation TGLS = 2-9 ]

Skin

Subcut Tiss

Fibroma

Chronic, Minimal

SOA, Subcut Tiss

Inflammation

[ Fibroma TGLS = 5-11 ]

[ Inflammation TGLS = 7-7 ]

Spleen

Congestion

Mild

[ Congestion TGLS = 3-8 ]

PRIMARY CAUSE OF DEATH

- Pituitary Gland Pars Distalis Adenoma

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 88034-07

Test Type: CHRONIC

Route: SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY

Species/Strain: Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

Test Compound: Ozone/NNK

CAS Number: OZONNNKCOMB

Date Report Requested: 10/21/2014

Time Report Requested: 05:28:18

First Dose M/F: NA / NA

Lab: BNW

ANIMAL ID: 8611

TRT#: 4

SEX: Male

DAY ON TEST: 389

DOSE: TRIOCT./OZONE

DISP: Moribund Sacrifice

HISTO: 26343

**ORGAN AND ACCOUNTABLE SITE STATUS**

**NORMAL**

\* Larynx

\* Trachea

**MISSING**

\* Lymph Node, Mediastinal

**OBSERVATIONS**

* Lung	Interstitial Alveolus	Fibrosis Infiltration Cellular Leukemia Mononuclear	Minimal Histiocyte, Minimal
	Alveolar Epith	Metaplasia	Minimal
* Lymph Node, Bronchial		Leukemia Mononuclear	
* Nose	Olfactory Epi Goblet Cell, Lateral Wall Lateral Wall	Degeneration Hyperplasia Hyperplasia	Hyaline, Mild Minimal Minimal
Peritoneum [ Inflammation TGLS = 4-7 ]		Inflammation	Chronic, Minimal
Pituitary Gland [ Adenoma TGLS = 1-7 ]	Pars Distalis	Adenoma	
Skin [ Inflammation TGLS = 5-6 ]	SOA, Subcut Tiss	Inflammation	Chronic, Minimal
Spleen [ Fibrosis TGLS = 2-8 ] [ Leukemia Mononuclear TGLS = 3-8 ]		Fibrosis Leukemia Mononuclear	Mild

PRIMARY CAUSE OF DEATH

- Spleen Leukemia Mononuclear

\* PROTOCOL REQUIRED TISSUE

**Experiment Number:** 88034-07

**Test Type:** CHRONIC

**Route:** SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY

**Species/Strain:** Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

**Test Compound:** Ozone/NNK

**CAS Number:** OZONNNKCOMB

**Date Report Requested:** 10/21/2014

**Time Report Requested:** 05:28:18

**First Dose M/F:** NA / NA

**Lab:** BNW

**ANIMAL ID:** 8612

**TRT#:** 4

**SEX:** Male

**DAY ON TEST:** 333

**DOSE:** TRIOCT./OZONE

**DISP:** Moribund Sacrifice

**HISTO:** 26344

**ORGAN AND ACCOUNTABLE SITE STATUS**

**NORMAL**

\* Larynx

\* Lymph Node, Bronchial

\* Lymph Node, Mediastinal

\* Trachea

**OBSERVATIONS**

\* Lung

Interstitial

Fibrosis

Minimal

Alveolar Epith

Metaplasia

Minimal

\* Nose

Olfactory Epi

Degeneration

Hyaline, Mild

Goblet Cell, Lateral Wall

Hyperplasia

Minimal

Lateral Wall

Hyperplasia

Minimal

Skin

SOA, Subcut Tiss

Inflammation

Chronic, Minimal

[ Inflammation TGLS = 2-6 ]

**PRIMARY CAUSE OF DEATH**

- UNCERTAIN

\* PROTOCOL REQUIRED TISSUE

**Experiment Number:** 88034-07

**Test Type:** CHRONIC

**Route:** SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY

**Species/Strain:** Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

**Test Compound:** Ozone/NNK

**CAS Number:** OZONNNKCOMB

**Date Report Requested:** 10/21/2014

**Time Report Requested:** 05:28:18

**First Dose M/F:** NA / NA

**Lab:** BNW

**ANIMAL ID:** 8613

**TRT#:** 4

**SEX:** Male

**DAY ON TEST:** 192

**DOSE:** TRIOCT./OZONE

**DISP:** Moribund Sacrifice

**HISTO:** 26345

**ORGAN AND ACCOUNTABLE SITE STATUS**

**NORMAL**

\* Larynx

\* Lymph Node, Mediastinal

\* Trachea

**MISSING**

\* Lymph Node, Bronchial

**OBSERVATIONS**

\* Lung

Interstitial

Fibrosis

Minimal

Alveolar Epith

Metaplasia

Minimal

\* Nose

Goblet Cell, Lateral Wall

Hyperplasia

Minimal

Lateral Wall

Hyperplasia

Minimal

Skin

SOA, Subcut Tiss

Inflammation

Chronic, Minimal

[ Inflammation TGLS = 1-6 ]

**PRIMARY CAUSE OF DEATH**

- UNCERTAIN

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 88034-07

Test Type: CHRONIC

Route: SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY

Species/Strain: Rat/F 344/N

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Test Compound: Ozone/NNK

CAS Number: OZONNNKCOMB

Date Report Requested: 10/21/2014

Time Report Requested: 05:28:18

First Dose M/F: NA / NA

Lab: BNW

ANIMAL ID: 8614

TRT#: 4

SEX: Male

DAY ON TEST: 712

DOSE: TRIOCT./OZONE

DISP: Moribund Sacrifice

HISTO: 26346

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

\* Larynx \* Trachea

OBSERVATIONS

Liver		Leukemia Mononuclear	
[ Leukemia Mononuclear TGLS = 3-9 ]			
* Lung	Interstitial	Fibrosis	Minimal
	Alveolar Epith	Hyperplasia	Mild
	Alveolus	Infiltration Cellular	Histiocyte, Mild
		Leukemia Mononuclear	
	Alveolar Epith	Metaplasia	Minimal
Note: The moderate histiocytic (alveolar macrophage) infiltrate was primarily within the focal area of atypical hyperplasia (TGL #7).			
[ Hyperplasia TGLS = 7-9 ]			
Lymph Node	Pancreatic	Leukemia Mononuclear	
[ Leukemia Mononuclear TGLS = 2-8 ]			
* Lymph Node, Bronchial		Leukemia Mononuclear	
* Lymph Node, Mediastinal		Leukemia Mononuclear	
* Nose	Olfactory Epi	Degeneration	Hyaline, Mild
	Goblet Cell, Lateral Wall	Hyperplasia	Minimal
	Lateral Wall	Hyperplasia	Minimal
Peritoneum		Inflammation	Chronic, Minimal
[ Inflammation TGLS = 4-7 ]			
Skin	SOA, Subcut Tiss	Inflammation	Chronic, Minimal
	SOA, Subcut Tiss	Sarcoma	
[ Inflammation TGLS = 5-6 ]			
[ Sarcoma TGLS = 6-7+8 ]			
Spleen		Leukemia Mononuclear	
[ Leukemia Mononuclear TGLS = 1-8 ]			

PRIMARY CAUSE OF DEATH - Spleen Leukemia Mononuclear

\* PROTOCOL REQUIRED TISSUE

**Experiment Number:** 88034-07  
**Test Type:** CHRONIC  
**Route:** SUBCUTANEOUS|RESPIRATORY  
 EXPOSURE WHOLE BODY  
**Species/Strain:** Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**  
**Test Compound:** Ozone/NNK  
**CAS Number:** OZONNNKCOMB

**Date Report Requested:** 10/21/2014  
**Time Report Requested:** 05:28:18  
**First Dose M/F:** NA / NA  
**Lab:** BNW

**ANIMAL ID:** 8615      **TRT#:** 4      **SEX:** Male      **DAY ON TEST:** 624  
**DOSE:** TRIOCT./OZONE      **DISP:** Moribund Sacrifice      **HISTO:** 26347

**ORGAN AND ACCOUNTABLE SITE STATUS**

**NORMAL**

\* Larynx      \* Trachea

**MISSING**

\* Lymph Node, Bronchial

**OBSERVATIONS**

Liver		Leukemia Mononuclear	
[ Leukemia Mononuclear TGLS = 2-8 ]			
* Lung	Interstitial	Fibrosis	Minimal
	Alveolus	Infiltration Cellular	Histiocyte, Minimal
		Leukemia Mononuclear	
	Alveolar Epith	Metaplasia	Minimal
[ Leukemia Mononuclear TGLS = 5-3 ]			
* Lymph Node, Mediastinal		Leukemia Mononuclear	
* Nose	Olfactory Epi	Degeneration	Hyaline, Mild
	Goblet Cell, Lateral Wall	Hyperplasia	Mild
	Lateral Wall	Hyperplasia	Minimal
Peritoneum		Inflammation	Chronic, Minimal
[ Inflammation TGLS = 4-6 ]			
Skin	SOA, Subcut Tiss	Inflammation	Chronic, Minimal
[ Inflammation TGLS = 3-7 ]			
Spleen		Leukemia Mononuclear	
[ Leukemia Mononuclear TGLS = 1-9 ]			

**PRIMARY CAUSE OF DEATH**      - Spleen    Leukemia Mononuclear

\* PROTOCOL REQUIRED TISSUE



**Experiment Number:** 88034-07

**Test Type:** CHRONIC

**Route:** SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY

**Species/Strain:** Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

**Test Compound:** Ozone/NNK

**CAS Number:** OZONNNKCOMB

**Date Report Requested:** 10/21/2014

**Time Report Requested:** 05:28:18

**First Dose M/F:** NA / NA

**Lab:** BNW

**ANIMAL ID:** 8616

**TRT#:** 4

**SEX:** Male

**DAY ON TEST:** 589

**DOSE:** TRIOCT./OZONE

**DISP:** Moribund Sacrifice

**HISTO:** 26348

**ORGAN AND ACCOUNTABLE SITE STATUS**

**NORMAL**

\* Lymph Node, Bronchial

\* Trachea

**MISSING**

\* Lymph Node, Mediastinal

**OBSERVATIONS**

* Larynx		Foreign Body	
Liver		Hyperplasia	Focal, Moderate
[ Hyperplasia TGLS = 3-8 ]			
* Lung	Interstitial	Fibrosis	Minimal
	Alveolar Epith	Metaplasia	Minimal
* Nose	Olfactory Epi	Degeneration	Hyaline, Mild
	Goblet Cell, Lateral Wall	Hyperplasia	Minimal
	Lateral Wall	Hyperplasia	Minimal
Skin	SOA, Subcut Tiss	Inflammation	Chronic, Minimal
	SOA, Subcut Tiss	Sarcoma	
[ Inflammation TGLS = 4-6 ]			
[ Sarcoma TGLS = 1-7 ]			
Testes	Interstit Cell	Adenoma	
[ Adenoma TGLS = 2-8 ]			

**PRIMARY CAUSE OF DEATH**

- Skin SOA Subcut Tiss Sarcoma

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 88034-07

Test Type: CHRONIC

Route: SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY

Species/Strain: Rat/F 344/N

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Test Compound: Ozone/NNK

CAS Number: OZONNNKCOMB

Date Report Requested: 10/21/2014

Time Report Requested: 05:28:18

First Dose M/F: NA / NA

Lab: BNW

ANIMAL ID: 8617

TRT#: 4

SEX: Male

DAY ON TEST: 736

DOSE: TRIOCT./OZONE

DISP: Terminal Sacrifice

HISTO: 26349

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

\* Larynx \* Trachea

OBSERVATIONS

Liver		Hepatodiaphragmatic Nodule Leukemia Mononuclear	
[ Hepatodiaphragmatic Nodule TGLS = 5-10 ]			
* Lung	Interstitium	Fibrosis Leukemia Mononuclear	Minimal
	Alveolar Epith	Metaplasia Leukemia Mononuclear	Minimal
* Lymph Node, Bronchial		Leukemia Mononuclear	
* Lymph Node, Mediastinal		Leukemia Mononuclear	
* Nose	Olfactory Epi Goblet Cell, Lateral Wall Lateral Wall	Degeneration Hyperplasia Hyperplasia Inflammation	Hyaline, Mild Minimal Minimal Chronic Active, Marked
Preputial Gland			
[ Inflammation TGLS = 1,8-8 ]			
Skin	SOA, Subcut Tiss	Inflammation	Chronic, Minimal
[ Inflammation TGLS = 7-6 ]			
Spleen		Leukemia Mononuclear	
[ Leukemia Mononuclear TGLS = 4-11 ]			
Testes	Interstit Cell	Adenoma	
[ Adenoma TGLS = 2,3-9 ]			
Tissue NOS		Sarcoma	
Note: TGL #6 is an anaplastic sarcoma located in retroperitoneal area adjacent to right kidney. It has also invaded adjacent skeletal muscle.			
[ Sarcoma TGLS = 6-7 ]			

PRIMARY CAUSE OF DEATH

-

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 88034-07

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Date Report Requested: 10/21/2014

Test Type: CHRONIC

Test Compound: Ozone/NNK

Time Report Requested: 05:28:18

Route: SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY

CAS Number: OZONNNKCOMB

First Dose M/F: NA / NA

Species/Strain: Rat/F 344/N

Lab: BNW

ANIMAL ID: 8618

TRT#: 4

SEX: Male

DAY ON TEST: 709

DOSE: TRIOCT./OZONE

DISP: Moribund Sacrifice

HISTO: 26350

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

Adrenal Cortex

\* Larynx

\* Trachea

MISSING

\* Lymph Node, Bronchial

\* Lymph Node, Mediastinal

OBSERVATIONS

Blood Vessel

Inflammation

Chronic, Mild

Mineralization

Moderate

Note: TGL #10 is chronic inflammation and mineralization of large mesenteric arteries rather than enlarged mesenteric lymph nodes as stated on IANR.

[ Inflammation TGLS = 10-10 ]

Kidney

Nephropathy

Marked

[ Nephropathy TGLS = 6-9 ]

Liver

Degeneration

Cystic, Mild

[ Degeneration TGLS = 5-8 ]

\* Lung

Interstitial

Inflammation

Chronic, Diffuse, Minimal

Mineralization

Moderate

Note: Diffuse interstitial inflammation and mineralization are probably secondary to uremia. These changes mask the usual effect of ozone exposure.

[ Inflammation TGLS = 1-3 ]

\* Nose

Olfactory Epi

Degeneration

Hyaline, Moderate

Goblet Cell, Lateral Wall

Hyperplasia

Minimal

Lateral Wall

Hyperplasia

Minimal

Peritoneum

Inflammation

Chronic, Minimal

[ Inflammation TGLS = 7-7 ]

Pituitary Gland

Pars Distalis

Adenoma

[ Adenoma TGLS = 2-10 ]

Skin

SOA, Subcut Tiss

Inflammation

Chronic, Minimal

[ Inflammation TGLS = 8-6 ]

Spleen

Fibrosis

Minimal

[ Fibrosis TGLS = 4-10 ]

Stomach, Forestomach

Mineralization

Moderate

[ Mineralization TGLS = 9-11 ]

\* PROTOCOL REQUIRED TISSUE

**Experiment Number:** 88034-07

**Test Type:** CHRONIC

**Route:** SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY

**Species/Strain:** Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

**Test Compound:** Ozone/NNK

**CAS Number:** OZONNNKCOMB

**Date Report Requested:** 10/21/2014

**Time Report Requested:** 05:28:18

**First Dose M/F:** NA / NA

**Lab:** BNW

---

**ANIMAL ID:** 8618

**TRT#:** 4

**SEX:** Male

**DAY ON TEST:** 709

**DOSE:** TRIOCT./OZONE

**DISP:** Moribund Sacrifice

**HISTO:** 26350

---

**ORGAN AND ACCOUNTABLE SITE STATUS**

Stomach, Glandular

[ Mineralization TGLS = 9-11 ]

Mineralization

Moderate

Testes

[ Adenoma TGLS = 3-10 ]

Interstit Cell

Adenoma

---

**PRIMARY CAUSE OF DEATH**

- Kidney Nephropathy

---

\* PROTOCOL REQUIRED TISSUE

**Experiment Number:** 88034-07

**Test Type:** CHRONIC

**Route:** SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY

**Species/Strain:** Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

**Test Compound:** Ozone/NNK

**CAS Number:** OZONNNKCOMB

**Date Report Requested:** 10/21/2014

**Time Report Requested:** 05:28:18

**First Dose M/F:** NA / NA

**Lab:** BNW

**ANIMAL ID:** 8619

**TRT#:** 4

**SEX:** Male

**DAY ON TEST:** 523

**DOSE:** TRIOCT./OZONE

**DISP:** Natural Death

**HISTO:** 26351

**ORGAN AND ACCOUNTABLE SITE STATUS**

**NORMAL**

* Larynx	* Lung	* Lymph Node, Bronchial	* Lymph Node, Mediastinal
* Trachea			

**OBSERVATIONS**

* Nose	Olfactory Epi	Degeneration	Hyaline, Mild
	Goblet Cell, Lateral Wall	Hyperplasia	Minimal
	Lateral Wall	Hyperplasia	Minimal
Oral Mucosa	Pharyngeal	Foreign Body	
[ Foreign Body TGLS = 1-1 ]			
Skin	SOA, Subcut Tiss	Inflammation	Chronic, Minimal
[ Inflammation TGLS = 2-6 ]			

**PRIMARY CAUSE OF DEATH**

- UNCERTAIN

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 88034-07

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Date Report Requested: 10/21/2014

Test Type: CHRONIC

Test Compound: Ozone/NNK

Time Report Requested: 05:28:18

Route: SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY

CAS Number: OZONNNKCOMB

First Dose M/F: NA / NA

Species/Strain: Rat/F 344/N

Lab: BNW

ANIMAL ID: 8620

TRT#: 4

SEX: Male

DAY ON TEST: 592

DOSE: TRIOCT./OZONE

DISP: Moribund Sacrifice

HISTO: 26352

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

\* Larynx \* Trachea

MISSING

\* Lymph Node, Bronchial

OBSERVATIONS

Kidney		Nephropathy	Moderate
[ Nephropathy TGLS = 6-10 ]			
Liver		Leukemia Mononuclear	
[ Leukemia Mononuclear TGLS = 7-8 ]			
* Lung	Interstitium	Fibrosis	Minimal
	Alveolar Epith	Metaplasia	Minimal
Lymph Node		Hyperplasia	Lymphoid, Mild
		Pigmentation	Moderate
Note: TGL 8 is a hyperplastic lymph node from abdominal cavity which contains dense black pigment. Probably an iliac node with tattoo ink.			
[ Hyperplasia TGLS = 8-8 ]			
* Lymph Node, Mediastinal		Leukemia Mononuclear	
[ Leukemia Mononuclear TGLS = 1-2 ]			
Mesentery	Fat	Necrosis	Mild
[ Necrosis TGLS = 9-9 ]			
* Nose	Olfactory Epi	Degeneration	Hyaline, Mild
	Goblet Cell, Lateral Wall	Hyperplasia	Minimal
	Lateral Wall	Hyperplasia	Minimal
Peritoneum		Inflammation	Chronic, Minimal
[ Inflammation TGLS = 5-7 ]			
Skin	SOA, Subcut Tiss	Inflammation	Chronic, Minimal
[ Inflammation TGLS = 10-6 ]			
Spleen		Leukemia Mononuclear	
[ Leukemia Mononuclear TGLS = 4-10 ]			
Testes	Interstit Cell	Adenoma	
[ Adenoma TGLS = 2,3-9+8 ]			

\* PROTOCOL REQUIRED TISSUE

**Experiment Number:** 88034-07

**Test Type:** CHRONIC

**Route:** SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY

**Species/Strain:** Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

**Test Compound:** Ozone/NNK

**CAS Number:** OZONNNKCOMB

**Date Report Requested:** 10/21/2014

**Time Report Requested:** 05:28:18

**First Dose M/F:** NA / NA

**Lab:** BNW

---

**ANIMAL ID:** 8620

**TRT#:** 4

**SEX:** Male

**DAY ON TEST:** 592

**DOSE:** TRIOCT./OZONE

**DISP:** Moribund Sacrifice

**HISTO:** 26352

---

**ORGAN AND ACCOUNTABLE SITE STATUS**

---

PRIMARY CAUSE OF DEATH

- Spleen Leukemia Mononuclear

---

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 88034-07

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Date Report Requested: 10/21/2014

Test Type: CHRONIC

Test Compound: Ozone/NNK

Time Report Requested: 05:28:18

Route: SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY

CAS Number: OZONNNKCOMB

First Dose M/F: NA / NA

Species/Strain: Rat/F 344/N

Lab: BNW

ANIMAL ID: 8621

TRT#: 4

SEX: Male

DAY ON TEST: 515

DOSE: TRIOCT./OZONE

DISP: Moribund Sacrifice

HISTO: 26353

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

\* Larynx

Preputial Gland

\* Trachea

OBSERVATIONS

Kidney [ Nephropathy TGLS = 7-9 ]		Nephropathy	Moderate
Liver Note: "Granular" liver described as TGL 6 is due to the presence of diffuse fatty change coded as cytoplasmic vacuolization. [ Vacuolization Cytoplasmic TGLS = 6-10 ]		Vacuolization Cytoplasmic	Mild
* Lung [ Hemorrhage TGLS = 2-3 ]	Interstitial	Fibrosis	Minimal
	Alveolar Epith	Hemorrhage	Minimal
		Metaplasia	Minimal
* Lymph Node, Bronchial [ Hyperplasia TGLS = 1-3 ]		Hyperplasia	Lymphoid, Mild
Lymph Node, Mandibular [ Infiltration Cellular TGLS = 3-8 ]		Infiltration Cellular	Plasma Cell, Mild
* Lymph Node, Mediastinal		Infiltration Cellular	Plasma Cell, Minimal
* Nose	Olfactory Epi	Degeneration	Hyaline, Mild
	Goblet Cell, Lateral Wall	Hyperplasia	Minimal
	Lateral Wall	Hyperplasia	Minimal
Peritoneum [ Inflammation TGLS = 8-7 ]		Inflammation	Chronic, Minimal
Pituitary Gland [ Adenoma TGLS = 4-12 ]	Pars Distalis	Adenoma	
Preputial GI Note: TGL 5 (grossly described as enlarged preputial gland) is due to normal accumulation of secretory product in the duct. Thus NCL was recorded on IANR form.			
Skin [ Inflammation TGLS = 9-6 ]	SOA, Subcut Tiss	Inflammation	Chronic, Minimal

PRIMARY CAUSE OF DEATH - Pituitary Gland Pars Distalis Adenoma

\* PROTOCOL REQUIRED TISSUE



Experiment Number: 88034-07

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Date Report Requested: 10/21/2014

Test Type: CHRONIC

Test Compound: Ozone/NNK

Time Report Requested: 05:28:18

Route: SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY

CAS Number: OZONNNKCOMB

First Dose M/F: NA / NA

Species/Strain: Rat/F 344/N

Lab: BNW

ANIMAL ID: 8622

TRT#: 4

SEX: Male

DAY ON TEST: 645

DOSE: TRIOCT./OZONE

DISP: Moribund Sacrifice

HISTO: 26354

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

\* Larynx

\* Trachea

MISSING

\* Lymph Node, Bronchial

OBSERVATIONS

Adrenal Cortex		Adenoma	
Note: No microscopic lesion corresponding to TGL #4 was observed.			
[ Adenoma TGLS = 5-12 ]			
Liver		Leukemia Mononuclear	
[ Leukemia Mononuclear TGLS = 3-11 ]			
* Lung		Leukemia Mononuclear	
Note: Due to extensive leukemic involvement in the lung, subtle changes in alveolar ducts induced by ozone could not be evaluated.			
[ Leukemia Mononuclear TGLS = 1-3 ]			
Lymph Node	Iliac	Leukemia Mononuclear	
	Pancreatic	Leukemia Mononuclear	
	Renal	Leukemia Mononuclear	
[ Leukemia Mononuclear TGLS = 8-9 ]			
[ Leukemia Mononuclear TGLS = 9-10 ]			
[ Leukemia Mononuclear TGLS = 6-8 ]			
* Lymph Node, Mediastinal		Leukemia Mononuclear	
[ Leukemia Mononuclear TGLS = 2-2 ]			
* Nose	Olfactory Epi	Degeneration	Hyaline, Moderate
	Goblet Cell, Lateral Wall	Hyperplasia	Minimal
	Lateral Wall	Hyperplasia	Minimal
Peritoneum		Inflammation	Chronic, Minimal
[ Inflammation TGLS = 10-6 ]			
Skin	SOA, Subcut Tiss	Inflammation	Chronic, Minimal
[ Inflammation TGLS = 11-7 ]			
Spleen		Leukemia Mononuclear	
[ Leukemia Mononuclear TGLS = 7-12 ]			

\* PROTOCOL REQUIRED TISSUE

**Experiment Number:** 88034-07

**Test Type:** CHRONIC

**Route:** SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY

**Species/Strain:** Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

**Test Compound:** Ozone/NNK

**CAS Number:** OZONNNKCOMB

**Date Report Requested:** 10/21/2014

**Time Report Requested:** 05:28:18

**First Dose M/F:** NA / NA

**Lab:** BNW

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**ANIMAL ID:** 8622

**TRT#:** 4

**SEX:** Male

**DAY ON TEST:** 645

**DOSE:** TRIOCT./OZONE

**DISP:** Moribund Sacrifice

**HISTO:** 26354

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**ORGAN AND ACCOUNTABLE SITE STATUS**

---

**PRIMARY CAUSE OF DEATH**

- Spleen Leukemia Mononuclear

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\* PROTOCOL REQUIRED TISSUE

Experiment Number: 88034-07

Test Type: CHRONIC

Route: SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY

Species/Strain: Rat/F 344/N

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Test Compound: Ozone/NNK

CAS Number: OZONNNKCOMB

Date Report Requested: 10/21/2014

Time Report Requested: 05:28:18

First Dose M/F: NA / NA

Lab: BNW

ANIMAL ID: 8623

TRT#: 4

SEX: Male

DAY ON TEST: 704

DOSE: TRIOCT./OZONE

DISP: Moribund Sacrifice

HISTO: 26355

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

\* Larynx

\* Trachea

MISSING

\* Lymph Node, Bronchial

OBSERVATIONS

Islets, Pancreatic		Carcinoma	
Note: TGL #5 is an islet cell carcinoma of the pancreas rather than an enlarged pancreatic lymph node that was described grossly.			
[ Carcinoma TGLS = 5-8 ]			
Kidney		Nephropathy	Moderate
[ Nephropathy TGLS = 7-9 ]			
Liver	Bile Duct	Hyperplasia	Moderate
[ Hyperplasia TGLS = 6-8 ]			
* Lung	Serosa	Inflammation	Chronic Active, Moderate
[ Inflammation TGLS = 1,2,10-3 ]			
* Lymph Node, Mediastinal		Inflammation	Chronic Active, Moderate
* Nose	Olfactory Epi	Degeneration	Hyaline, Mild
	Lateral Wall	Hyperplasia	Minimal
		Inflammation	Suppurative, Mild
Peritoneum		Inflammation	Chronic, Minimal
[ Inflammation TGLS = 8-7 ]			
Skin	SOA, Subcut Tiss	Inflammation	Chronic, Minimal
[ Inflammation TGLS = 9-6 ]			
Spleen		Necrosis	Marked
[ Necrosis TGLS = 4-8 ]			
Testes	Interstit Cell	Adenoma	
[ Adenoma TGLS = 3-8 ]			
Tissue NOS	Mediastinum	Inflammation	Chronic Active, Diffuse, Marked
PRIMARY CAUSE OF DEATH	- Islets, Pancreatic Carcinoma		

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 88034-07

Test Type: CHRONIC

Route: SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY

Species/Strain: Rat/F 344/N

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Test Compound: Ozone/NNK

CAS Number: OZONNNKCOMB

Date Report Requested: 10/21/2014

Time Report Requested: 05:28:18

First Dose M/F: NA / NA

Lab: BNW

ANIMAL ID: 8624

TRT#: 4

SEX: Male

DAY ON TEST: 611

DOSE: TRIOCT./OZONE

DISP: Moribund Sacrifice

HISTO: 26356

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

\* Larynx

\* Lymph Node, Mediastinal

\* Trachea

MISSING

\* Lymph Node, Bronchial

OBSERVATIONS

Kidney		Nephropathy	Moderate
[ Nephropathy TGLS = 4-9 ]			
Liver		Vacuolization Cytoplasmic	Mild
[ Vacuolization Cytoplasmic TGLS = 3-8 ]			
* Lung	Interstitium	Fibrosis	Minimal
	Bronchus	Inflammation	Suppurative, Moderate
	Alveolar Epith	Metaplasia	Minimal
Mesentery	Fat	Necrosis	Moderate
[ Necrosis TGLS = 7-10 ]			
* Nose	Olfactory Epi	Degeneration	Hyaline, Mild
	Goblet Cell, Lateral Wall	Hyperplasia	Minimal
	Lateral Wall	Hyperplasia	Minimal
Peritoneum		Inflammation	Chronic, Minimal
[ Inflammation TGLS = 5-6 ]			
Pituitary Gland	Pars Distalis	Adenoma	
[ Adenoma TGLS = 1-9 ]			
Preputial Gland		Inflammation	Chronic Active, Moderate
[ Inflammation TGLS = 2-8 ]			
Skin	SOA, Subcut Tiss	Inflammation	Chronic, Minimal
[ Inflammation TGLS = 6-7 ]			

PRIMARY CAUSE OF DEATH

- Pituitary Gland Pars Distalis Adenoma

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 88034-07

Test Type: CHRONIC

Route: SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY

Species/Strain: Rat/F 344/N

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Test Compound: Ozone/NNK

CAS Number: OZONNNKCOMB

Date Report Requested: 10/21/2014

Time Report Requested: 05:28:18

First Dose M/F: NA / NA

Lab: BNW

ANIMAL ID: 8625

TRT#: 4

SEX: Male

DAY ON TEST: 617

DOSE: TRIOCT./OZONE

DISP: Moribund Sacrifice

HISTO: 26357

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

* Larynx	* Lymph Node, Bronchial	Penis	Testes
* Trachea			

OBSERVATIONS

Adrenal Cortex		Angiectasis	Moderate
[ Angiectasis TGLS = 6-8 ]			
Liver		Angiectasis	Mild
[ Angiectasis TGLS = 4-9 ]			
* Lung	Interstitial	Fibrosis	Minimal
	Alveolar Epith	Metaplasia	Minimal
* Lymph Node, Mediastinal		Hemorrhage	Moderate
Mesentery		Sarcoma	
[ Sarcoma TGLS = 2-10 ]			
* Nose	Olfactory Epi	Degeneration	Hyaline, Mild
	Lateral Wall	Hyperplasia	Minimal
Penis			
Note: No microscopic lesion corresponding to TGL #1 (penis, distended, 8mm dia.) was observed. Gross change probably due to edema.			
Peritoneum		Inflammation	Chronic, Minimal
[ Inflammation TGLS = 8-6 ]			
Pituitary Gland	Pars Distalis	Adenoma	
[ Adenoma TGLS = 3-9 ]			
Skin	SOA, Subcut Tiss	Inflammation	Chronic, Minimal
[ Inflammation TGLS = 9-7 ]			
Spleen		Hematopoietic Cell Proliferation	Moderate
[ Hematopoietic Cell Proliferation TGLS = 5-9 ]			
Testes			
Note: No microscopic lesion corresponding to TGL #7 (testes, bilateral, mottled, red) was observed. Gross appearance probably due to blood pooling after euthanasia.			

PRIMARY CAUSE OF DEATH - Mesentery Sarcoma

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 88034-07

Test Type: CHRONIC

Route: SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY

Species/Strain: Rat/F 344/N

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Test Compound: Ozone/NNK

CAS Number: OZONNNKCOMB

Date Report Requested: 10/21/2014

Time Report Requested: 05:28:18

First Dose M/F: NA / NA

Lab: BNW

ANIMAL ID: 8626

TRT#: 4

SEX: Male

DAY ON TEST: 736

DOSE: TRIOCT./OZONE

DISP: Terminal Sacrifice

HISTO: 26358

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

\* Larynx

\* Lymph Node, Mediastinal

\* Trachea

MISSING

\* Lymph Node, Bronchial

OBSERVATIONS

Kidney [ Nephropathy TGLS = 1-7 ]		Nephropathy	Moderate
* Lung	Interstitial	Fibrosis	Minimal
	Alveolar Epith	Metaplasia	Minimal
* Nose	Olfactory Epi	Degeneration	Hyaline, Moderate
	Goblet Cell, Lateral Wall	Hyperplasia	Minimal
	Lateral Wall	Hyperplasia	Minimal
Skin [ Inflammation TGLS = 5-6 ]	SOA, Subcut Tiss	Inflammation	Chronic, Minimal
Spleen		Congestion	Mild
		Fibrosis	Moderate
Testes [ Adenoma TGLS = 4-9 ]	Interstit Cell	Adenoma	

PRIMARY CAUSE OF DEATH

-

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 88034-07

Test Type: CHRONIC

Route: SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY

Species/Strain: Rat/F 344/N

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Test Compound: Ozone/NNK

CAS Number: OZONNNKCOMB

Date Report Requested: 10/21/2014

Time Report Requested: 05:28:18

First Dose M/F: NA / NA

Lab: BNW

ANIMAL ID: 8627

TRT#: 4

SEX: Male

DAY ON TEST: 590

DOSE: TRIOCT./OZONE

DISP: Natural Death

HISTO: 26359

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

\* Lymph Node, Mediastinal

\* Trachea

MISSING

\* Lymph Node, Bronchial

OBSERVATIONS

* Larynx		Inflammation	Suppurative, Mild
Liver		Vacuolization Cytoplasmic	Mild
	[ Vacuolization Cytoplasmic TGLS = 3-10 ]		
* Lung		Alveolar/Bronchiolar Adenoma	
	[ Alveolar/Bronchiolar Adenoma TGLS = 8-9 ]		
Lymph Node, Mandibular		Infiltration Cellular	Plasma Cell, Mild
	[ Infiltration Cellular TGLS = 1-9 ]		
* Nose	Olfactory Epi	Degeneration	Hyaline, Mild
	Goblet Cell, Lateral Wall	Hyperplasia	Minimal
	Lateral Wall	Hyperplasia	Minimal
Peritoneum		Inflammation	Chronic, Minimal
	[ Inflammation TGLS = 4-8 ]		
Pituitary Gland	Pars Distalis	Adenoma	
	[ Adenoma TGLS = 2-10 ]		
Skin	SOA, Subcut Tiss	Inflammation	Chronic, Minimal
		Inflammation	Suppurative, Moderate
	[ Inflammation TGLS = 5-7 ]		
	[ Inflammation TGLS = 6-6 ]		

PRIMARY CAUSE OF DEATH - Pituitary Gland Pars Distalis Adenoma

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 88034-07

Test Type: CHRONIC

Route: SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY

Species/Strain: Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

Test Compound: Ozone/NNK

CAS Number: OZONNNKCOMB

Date Report Requested: 10/21/2014

Time Report Requested: 05:28:18

First Dose M/F: NA / NA

Lab: BNW

ANIMAL ID: 8628

TRT#: 4

SEX: Male

DAY ON TEST: 605

DOSE: TRIOCT./OZONE

DISP: Moribund Sacrifice

HISTO: 26360

**ORGAN AND ACCOUNTABLE SITE STATUS**

**NORMAL**

\* Larynx \* Trachea

**MISSING**

\* Lymph Node, Bronchial

**OBSERVATIONS**

Eye	Ciliary Body, Retina	Cataract Degeneration	Marked Marked
[ Cataract TGLS = 1-10 ]			
Liver		Leukemia Mononuclear	
[ Leukemia Mononuclear TGLS = 7-9 ]			
* Lung	Interstitium	Fibrosis	Minimal
	Alveolar Epith	Leukemia Mononuclear Metaplasia	Minimal
Note: NO CORRESPONDING LESION FOR TGLs = 2-3.			
* Lymph Node, Mediastinal		Leukemia Mononuclear	
* Nose	Olfactory Epi Goblet Cell, Lateral Wall Lateral Wall	Degeneration Hyperplasia Hyperplasia	Hyaline, Mild Minimal Minimal
Peritoneum		Inflammation	Chronic, Minimal
[ Inflammation TGLS = 8-7 ]			
Pituitary Gland	Pars Distalis	Adenoma	
[ Adenoma TGLS = 3-8 ]			
Skin	SOA, Subcut Tiss	Inflammation	Chronic, Minimal
[ Inflammation TGLS = 9-6 ]			
Spleen		Fibrosis Leukemia Mononuclear	Moderate
[ Fibrosis TGLS = 6-8 ]			
[ Leukemia Mononuclear TGLS = 5-8 ]			
Testes	Interstit Cell	Adenoma	
[ Adenoma TGLS = 4-8 ]			

\* PROTOCOL REQUIRED TISSUE



**Experiment Number:** 88034-07

**Test Type:** CHRONIC

**Route:** SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY

**Species/Strain:** Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

**Test Compound:** Ozone/NNK

**CAS Number:** OZONNNKCOMB

**Date Report Requested:** 10/21/2014

**Time Report Requested:** 05:28:18

**First Dose M/F:** NA / NA

**Lab:** BNW

---

**ANIMAL ID:** 8628

**TRT#:** 4

**SEX:** Male

**DAY ON TEST:** 605

**DOSE:** TRIOCT./OZONE

**DISP:** Moribund Sacrifice

**HISTO:** 26360

---

**ORGAN AND ACCOUNTABLE SITE STATUS**

---

**PRIMARY CAUSE OF DEATH**

- Spleen Leukemia Mononuclear

---

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 88034-07

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Date Report Requested: 10/21/2014

Test Type: CHRONIC

Test Compound: Ozone/NNK

Time Report Requested: 05:28:18

Route: SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY

CAS Number: OZONNNKCOMB

First Dose M/F: NA / NA

Species/Strain: Rat/F 344/N

Lab: BNW

ANIMAL ID: 8629

TRT#: 4

SEX: Male

DAY ON TEST: 635

DOSE: TRIOCT./OZONE

DISP: Moribund Sacrifice

HISTO: 26361

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

\* Larynx

\* Lymph Node, Bronchial

\* Lymph Node, Mediastinal

\* Trachea

OBSERVATIONS

Kidney

Nephropathy

Marked

[ Nephropathy TGLS = 5-9 ]

\* Lung

Interstitial

Fibrosis

Minimal

Alveolar Epith

Metaplasia

Minimal

Note: No microscopic lesion corresponding to TGL #1 (Lung, all lobes, pale) was observed.

\* Nose

Olfactory Epi

Degeneration

Hyaline, Mild

Goblet Cell, Lateral Wall

Hyperplasia

Minimal

Lateral Wall

Hyperplasia

Minimal

Peritoneum

Inflammation

Chronic, Minimal

[ Inflammation TGLS = 6-6 ]

Pituitary Gland

Pars Distalis

Adenoma

[ Adenoma TGLS = 2-8 ]

Skin

SOA, Subcut Tiss

Inflammation

Chronic, Minimal

[ Inflammation TGLS = 3-7 ]

Spleen

Fibrosis

Moderate

[ Fibrosis TGLS = 4-8 ]

PRIMARY CAUSE OF DEATH

- Kidney Nephropathy

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 88034-07

Test Type: CHRONIC

Route: SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY

Species/Strain: Rat/F 344/N

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Test Compound: Ozone/NNK

CAS Number: OZONNNKCOMB

Date Report Requested: 10/21/2014

Time Report Requested: 05:28:18

First Dose M/F: NA / NA

Lab: BNW

ANIMAL ID: 8630

TRT#: 4

SEX: Male

DAY ON TEST: 694

DOSE: TRIOCT./OZONE

DISP: Natural Death

HISTO: 26362

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

\* Larynx \* Trachea

OBSERVATIONS

Kidney [ Nephropathy TGLS = 8-9 ]		Nephropathy	Moderate
* Lung		Leukemia Mononuclear	
* Lymph Node, Bronchial		Leukemia Mononuclear	
* Lymph Node, Mediastinal		Leukemia Mononuclear	
* Nose	Olfactory Epi Goblet Cell, Lateral Wall Lateral Wall	Degeneration Hyperplasia Hyperplasia Inflammation	Hyaline, Mild Minimal Minimal Chronic, Minimal
Peritoneum [ Inflammation TGLS = 6-7 ]			
Pituitary Gland [ Adenoma TGLS = 2-8 ]	Pars Distalis	Adenoma	
Preputial Gland [ Inflammation TGLS = 3-10 ]		Inflammation	Chronic Active, Mild
Skin [ Inflammation TGLS = 7-6 ] [ Squamous Cell Papilloma TGLS = 1-8 ]	SOA, Subcut Tiss	Inflammation Squamous Cell Papilloma	Chronic, Minimal
Spleen [ Leukemia Mononuclear TGLS = 5-8 ]		Leukemia Mononuclear	

PRIMARY CAUSE OF DEATH - Spleen Leukemia Mononuclear

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 88034-07

Test Type: CHRONIC

Route: SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY

Species/Strain: Rat/F 344/N

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Test Compound: Ozone/NNK

CAS Number: OZONNNKCOMB

Date Report Requested: 10/21/2014

Time Report Requested: 05:28:18

First Dose M/F: NA / NA

Lab: BNW

ANIMAL ID: 8631

TRT#: 4

SEX: Male

DAY ON TEST: 736

DOSE: TRIOCT./OZONE

DISP: Terminal Sacrifice

HISTO: 26363

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

\* Larynx

\* Lymph Node, Mediastinal

\* Trachea

MISSING

\* Lymph Node, Bronchial

OBSERVATIONS

Kidney		Cyst	Mild
		Nephropathy	Marked
[ Cyst TGLS = 4-9 ]			
[ Nephropathy TGLS = 3-9 ]			
* Lung	Interstitial	Fibrosis	Minimal
	Alveolar Epith	Metaplasia	Minimal
* Nose	Olfactory Epi	Degeneration	Hyaline, Mild
	Goblet Cell, Lateral Wall	Hyperplasia	Minimal
	Lateral Wall	Hyperplasia	Minimal
Peritoneum		Inflammation	Chronic, Minimal
[ Inflammation TGLS = 5-6 ]			
Pituitary Gland	Pars Distalis	Adenoma	
[ Adenoma TGLS = 1-10 ]			
Skin	SOA, Subcut Tiss	Inflammation	Chronic, Minimal
[ Inflammation TGLS = 6-7 ]			
Spleen		Leukemia Mononuclear	
[ Leukemia Mononuclear TGLS = 7-10 ]			
Testes	Interstit Cell	Adenoma	
[ Adenoma TGLS = 2-8 ]			

PRIMARY CAUSE OF DEATH

-

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 88034-07

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Date Report Requested: 10/21/2014

Test Type: CHRONIC

Test Compound: Ozone/NNK

Time Report Requested: 05:28:18

Route: SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY

CAS Number: OZONNNKCOMB

First Dose M/F: NA / NA

Species/Strain: Rat/F 344/N

Lab: BNW

ANIMAL ID: 8632

TRT#: 4

SEX: Male

DAY ON TEST: 705

DOSE: TRIOCT./OZONE

DISP: Moribund Sacrifice

HISTO: 26364

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

\* Larynx

\* Lymph Node, Mediastinal

\* Trachea

MISSING

\* Lymph Node, Bronchial

OBSERVATIONS

Kidney		Nephropathy	Marked
[ Nephropathy TGLS = 7-8 ]			
Liver		Degeneration Leukemia Mononuclear	Cystic, Mild
[ Degeneration TGLS = 6-9 ]			
[ Leukemia Mononuclear TGLS = 5-9 ]			
* Lung	Interstitial	Fibrosis Leukemia Mononuclear	Minimal
	Alveolar Epith	Metaplasia	Minimal
[ Leukemia Mononuclear TGLS = 1-3 ]			
* Nose	Olfactory Epi Goblet Cell, Lateral Wall Lateral Wall	Degeneration Hyperplasia Hyperplasia	Hyaline, Mild Minimal Minimal
Peritoneum		Inflammation	Chronic, Minimal
[ Inflammation TGLS = 8-6 ]			
Pituitary Gland	Pars Distalis	Adenoma	
[ Adenoma TGLS = 2-10 ]			
Skin	SOA, Subcut Tiss	Inflammation	Chronic, Minimal
[ Inflammation TGLS = 9-7 ]			
Spleen		Leukemia Mononuclear	
[ Leukemia Mononuclear TGLS = 4-10 ]			
Testes	Interstit Cell	Adenoma	
[ Adenoma TGLS = 3-10 ]			

PRIMARY CAUSE OF DEATH - Spleen Leukemia Mononuclear

\* PROTOCOL REQUIRED TISSUE

**Experiment Number:** 88034-07

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

**Date Report Requested:** 10/21/2014

**Test Type:** CHRONIC

**Test Compound:** Ozone/NNK

**Time Report Requested:** 05:28:18

**Route:** SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY

**CAS Number:** OZONNNKCOMB

**First Dose M/F:** NA / NA

**Species/Strain:** Rat/F 344/N

**Lab:** BNW

**ANIMAL ID:** 8633

**TRT#:** 4

**SEX:** Male

**DAY ON TEST:** 580

**DOSE:** TRIOCT./OZONE

**DISP:** Natural Death

**HISTO:** 26365

**ORGAN AND ACCOUNTABLE SITE STATUS**

**NORMAL**

\* Larynx \* Trachea

**MISSING**

\* Lymph Node, Bronchial

**AUTO PRECLUDES DIAG.**

Intestine Large, Cecum

**OBSERVATIONS**

Int Lg Cecum

Note: No microscopic lesion corresponding to TGL 7 (cecum, enlarged, dark, mottled) was observed. Gross changes were probably related to autolysis.

Liver		Angiectasis	Mild
		Leukemia Mononuclear	
	[ Angiectasis TGLS = 10-8 ]		
	[ Leukemia Mononuclear TGLS = 4-8 ]		
* Lung		Leukemia Mononuclear	
	Note: Extensive leukemic infiltrate in lung masks any ozone-induced changes in alveolar ducts.		
Lymph Node	Pancreatic	Leukemia Mononuclear	
	[ Leukemia Mononuclear TGLS = 5-9 ]		
Lymph Node, Mandibular		Leukemia Mononuclear	
	[ Leukemia Mononuclear TGLS = 1-8 ]		
* Lymph Node, Mediastinal		Leukemia Mononuclear	
	[ Leukemia Mononuclear TGLS = 2-2+8 ]		
* Nose	Olfactory Epi	Degeneration	Hyaline, Moderate
	Goblet Cell, Lateral Wall	Hyperplasia	Minimal
	Lateral Wall	Hyperplasia	Minimal
	Olfactory Epi	Metaplasia	Minimal
Peritoneum		Inflammation	Chronic, Minimal
	[ Inflammation TGLS = 8-7 ]		
Skin	SOA, Subcut Tiss	Inflammation	Chronic, Minimal
	[ Inflammation TGLS = 9-6 ]		
Spleen		Leukemia Mononuclear	

\* PROTOCOL REQUIRED TISSUE

**Experiment Number:** 88034-07

**Test Type:** CHRONIC

**Route:** SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY

**Species/Strain:** Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

**Test Compound:** Ozone/NNK

**CAS Number:** OZONNNKCOMB

**Date Report Requested:** 10/21/2014

**Time Report Requested:** 05:28:18

**First Dose M/F:** NA / NA

**Lab:** BNW

---

**ANIMAL ID:** 8633

**TRT#:** 4

**SEX:** Male

**DAY ON TEST:** 580

**DOSE:** TRIOCT./OZONE

**DISP:** Natural Death

**HISTO:** 26365

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**ORGAN AND ACCOUNTABLE SITE STATUS**

[ Leukemia Mononuclear TGLS = 6-9 ]

Testes

Interstit Cell

Adenoma

[ Adenoma TGLS = 3-8 ]

Urinary Bladder

Hemorrhage

Mild

[ Hemorrhage TGLS = 11-10 ]

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**PRIMARY CAUSE OF DEATH**

- Spleen Leukemia Mononuclear

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 88034-07

Test Type: CHRONIC

Route: SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY

Species/Strain: Rat/F 344/N

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Test Compound: Ozone/NNK

CAS Number: OZONNNKCOMB

Date Report Requested: 10/21/2014

Time Report Requested: 05:28:18

First Dose M/F: NA / NA

Lab: BNW

ANIMAL ID: 8634

TRT#: 4

SEX: Male

DAY ON TEST: 550

DOSE: TRIOCT./OZONE

DISP: Moribund Sacrifice

HISTO: 26366

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

\* Larynx

\* Lymph Node, Mediastinal

\* Trachea

MISSING

\* Lymph Node, Bronchial

OBSERVATIONS

Liver [ Angiectasis TGLS = 3-7 ]		Angiectasis	Minimal
* Lung	Interstitial Alveolus Alveolar Epith	Fibrosis Infiltration Cellular Metaplasia	Minimal Histiocyte, Minimal Minimal
Lymph Node [ Inflammation TGLS = 4-7 ]	Renal	Inflammation	Granulomatous, Mild
Lymph Node, Mandibular [ Infiltration Cellular TGLS = 1-7 ]		Infiltration Cellular	Plasma Cell, Mild
* Nose	Olfactory Epi Goblet Cell, Lateral Wall Lateral Wall	Degeneration Hyperplasia Hyperplasia	Hyaline, Mild Minimal Minimal
Peritoneum [ Inflammation TGLS = 5-8 ]		Inflammation	Chronic, Minimal
Pituitary Gland [ Adenoma TGLS = 2-7 ]	Pars Distalis	Adenoma	
Skin [ Inflammation TGLS = 6-6 ]	SOA, Subcut Tiss	Inflammation	Chronic, Minimal

PRIMARY CAUSE OF DEATH

- Pituitary Gland Pars Distalis Adenoma

\* PROTOCOL REQUIRED TISSUE



Experiment Number: 88034-07

Test Type: CHRONIC

Route: SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY

Species/Strain: Rat/F 344/N

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Test Compound: Ozone/NNK

CAS Number: OZONNNKCOMB

Date Report Requested: 10/21/2014

Time Report Requested: 05:28:18

First Dose M/F: NA / NA

Lab: BNW

ANIMAL ID: 8635

TRT#: 4

SEX: Male

DAY ON TEST: 661

DOSE: TRIOCT./OZONE

DISP: Moribund Sacrifice

HISTO: 26367

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

\* Larynx \* Trachea

OBSERVATIONS

Liver		Leukemia Mononuclear Necrosis	Focal, Minimal
[ Leukemia Mononuclear TGLS = 5-9 ]			
* Lung		Hemorrhage Leukemia Mononuclear	Mild
[ Hemorrhage TGLS = 8-3 ]			
* Lymph Node, Bronchial		Leukemia Mononuclear	
* Lymph Node, Mediastinal		Leukemia Mononuclear	
* Nose	Olfactory Epi Goblet Cell, Lateral Wall Lateral Wall	Degeneration Hyperplasia Hyperplasia Inflammation	Hyaline, Mild Minimal Minimal Chronic, Minimal
Peritoneum			
[ Inflammation TGLS = 6-6 ]			
Pituitary Gland	Pars Distalis	Adenoma	
[ Adenoma TGLS = 1-8 ]			
Preputial Gland		Inflammation	Chronic Active, Moderate
[ Inflammation TGLS = 2-11 ]			
Skin	SOA, Subcut Tiss	Inflammation	Chronic, Minimal
[ Inflammation TGLS = 7-7 ]			
Spleen		Leukemia Mononuclear	
[ Leukemia Mononuclear TGLS = 4-8 ]			
Testes	Interstit Cell	Adenoma	
[ Adenoma TGLS = 3-10 ]			

PRIMARY CAUSE OF DEATH - Spleen Leukemia Mononuclear

\* PROTOCOL REQUIRED TISSUE

**Experiment Number:** 88034-07

**Test Type:** CHRONIC

**Route:** SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY

**Species/Strain:** Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

**Test Compound:** Ozone/NNK

**CAS Number:** OZONNNKCOMB

**Date Report Requested:** 10/21/2014

**Time Report Requested:** 05:28:18

**First Dose M/F:** NA / NA

**Lab:** BNW

**ANIMAL ID:** 8636

**TRT#:** 4

**SEX:** Male

**DAY ON TEST:** 659

**DOSE:** TRIOCT./OZONE

**DISP:** Natural Death

**HISTO:** 26368

**ORGAN AND ACCOUNTABLE SITE STATUS**

**NORMAL**

\* Larynx

\* Lymph Node, Mediastinal

\* Trachea

**OBSERVATIONS**

\* Lung

Leukemia Mononuclear

\* Lymph Node, Bronchial

Leukemia Mononuclear

\* Nose

Olfactory Epi

Degeneration

Hyaline, Minimal

Goblet Cell, Lateral Wall

Hyperplasia

Minimal

Lateral Wall

Hyperplasia

Minimal

Pars Distalis

Adenoma

Pituitary Gland

[ Adenoma TGLS = 3-7 ]

Skin

SOA, Subcut Tiss

Inflammation

Chronic, Minimal

[ Inflammation TGLS = 2-6 ]

Spleen

Leukemia Mononuclear

[ Leukemia Mononuclear TGLS = 1-7 ]

**PRIMARY CAUSE OF DEATH**

- Spleen Leukemia Mononuclear

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 88034-07

Test Type: CHRONIC

Route: SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY

Species/Strain: Rat/F 344/N

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Test Compound: Ozone/NNK

CAS Number: OZONNNKCOMB

Date Report Requested: 10/21/2014

Time Report Requested: 05:28:18

First Dose M/F: NA / NA

Lab: BNW

ANIMAL ID: 8637

TRT#: 4

SEX: Male

DAY ON TEST: 634

DOSE: TRIOCT./OZONE

DISP: Moribund Sacrifice

HISTO: 26369

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

\* Larynx \* Trachea

OBSERVATIONS

Liver		Leukemia Mononuclear	
[ Leukemia Mononuclear TGLS = 5-8 ]			
* Lung	Interstitial	Fibrosis	Minimal
	Alveolar Epith	Leukemia Mononuclear	
[ Leukemia Mononuclear TGLS = 2-3 ]		Metaplasia	Minimal
Lymph Node	Iliac	Leukemia Mononuclear	
[ Leukemia Mononuclear TGLS = 9-8 ]			
* Lymph Node, Bronchial		Leukemia Mononuclear	
Lymph Node, Mandibular		Leukemia Mononuclear	
[ Leukemia Mononuclear TGLS = 1-9 ]			
* Lymph Node, Mediastinal		Leukemia Mononuclear	
[ Leukemia Mononuclear TGLS = 3-2 ]			
Lymph Node, Mesenteric		Leukemia Mononuclear	
[ Leukemia Mononuclear TGLS = 10-10 ]			
* Nose	Olfactory Epi	Degeneration	Hyaline, Moderate
	Lateral Wall	Hyperplasia	Minimal
Peritoneum		Inflammation	Chronic, Minimal
[ Inflammation TGLS = 11-6 ]			
Pituitary Gland	Pars Distalis	Adenoma	
[ Adenoma TGLS = 4-9 ]			
Skin	SOA, Subcut Tiss	Inflammation	Chronic, Minimal
[ Inflammation TGLS = 12-7 ]			
Spleen		Leukemia Mononuclear	
[ Leukemia Mononuclear TGLS = 7,8-9 ]			
Testes	Interstit Cell	Adenoma	
[ Adenoma TGLS = 6-8 ]			

\* PROTOCOL REQUIRED TISSUE

**Experiment Number:** 88034-07

**Test Type:** CHRONIC

**Route:** SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY

**Species/Strain:** Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

**Test Compound:** Ozone/NNK

**CAS Number:** OZONNNKCOMB

**Date Report Requested:** 10/21/2014

**Time Report Requested:** 05:28:18

**First Dose M/F:** NA / NA

**Lab:** BNW

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**ANIMAL ID:** 8637

**TRT#:** 4

**SEX:** Male

**DAY ON TEST:** 634

**DOSE:** TRIOCT./OZONE

**DISP:** Moribund Sacrifice

**HISTO:** 26369

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**ORGAN AND ACCOUNTABLE SITE STATUS**

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PRIMARY CAUSE OF DEATH

- Spleen Leukemia Mononuclear

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\* PROTOCOL REQUIRED TISSUE

Experiment Number: 88034-07

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Date Report Requested: 10/21/2014

Test Type: CHRONIC

Test Compound: Ozone/NNK

Time Report Requested: 05:28:18

Route: SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY

CAS Number: OZONNNKCOMB

First Dose M/F: NA / NA

Species/Strain: Rat/F 344/N

Lab: BNW

ANIMAL ID: 8638

TRT#: 4

SEX: Male

DAY ON TEST: 634

DOSE: TRIOCT./OZONE

DISP: Moribund Sacrifice

HISTO: 26370

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

\* Trachea

MISSING

\* Lymph Node, Bronchial

OBSERVATIONS

* Larynx		Inflammation	Suppurative, Minimal
Liver		Leukemia Mononuclear	
	[ Leukemia Mononuclear TGLS = 7-12 ]		
* Lung	Interstitium	Fibrosis	Minimal
		Leukemia Mononuclear	
	Alveolar Epith	Metaplasia	Minimal
Lymph Node	Renal	Leukemia Mononuclear	
	Note: TGL #11 is a galactocoele in mammary tissue rather than a lesion in axillary lymph node as indicated on the IANR form.		
	[ Leukemia Mononuclear TGLS = 8-9 ]		
* Lymph Node, Mediastinal		Leukemia Mononuclear	
	[ Leukemia Mononuclear TGLS = 2-2 ]		
Lymph Node, Mesenteric		Hyperplasia	Lymphoid, Moderate
Mammary Gland		Galactocoele	Moderate
	[ Galactocoele TGLS = 11-10 ]		
Mesentery	Fat	Necrosis	Mild
	[ Necrosis TGLS = 5-6 ]		
* Nose	Olfactory Epi	Degeneration	Hyaline, Mild
	Goblet Cell, Lateral Wall	Hyperplasia	Minimal
	Lateral Wall	Hyperplasia	Minimal
		Inflammation	Suppurative, Mild
	Turbinate	Necrosis	Moderate
Peritoneum		Inflammation	Chronic, Minimal
	[ Inflammation TGLS = 9-7 ]		
Pituitary Gland	Pars Distalis	Adenoma	
	[ Adenoma TGLS = 3-11 ]		

\* PROTOCOL REQUIRED TISSUE

**Experiment Number:** 88034-07

**Test Type:** CHRONIC

**Route:** SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY

**Species/Strain:** Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

**Test Compound:** Ozone/NNK

**CAS Number:** OZONNNKCOMB

**Date Report Requested:** 10/21/2014

**Time Report Requested:** 05:28:18

**First Dose M/F:** NA / NA

**Lab:** BNW

**ANIMAL ID:** 8638

**TRT#:** 4

**SEX:** Male

**DAY ON TEST:** 634

**DOSE:** TRIOCT./OZONE

**DISP:** Moribund Sacrifice

**HISTO:** 26370

**ORGAN AND ACCOUNTABLE SITE STATUS**

Skin	Prepuce	Inflammation	Suppurative, Mild
	SOA, Subcut Tiss	Inflammation	Chronic, Minimal
[ Inflammation TGLS = 10-8 ]			
[ Inflammation TGLS = 4-13 ]			
Spleen		Leukemia Mononuclear	
[ Leukemia Mononuclear TGLS = 6-11 ]			
PRIMARY CAUSE OF DEATH	- Spleen	Leukemia Mononuclear	

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 88034-07

Test Type: CHRONIC

Route: SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY

Species/Strain: Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

Test Compound: Ozone/NNK

CAS Number: OZONNNKCOMB

Date Report Requested: 10/21/2014

Time Report Requested: 05:28:18

First Dose M/F: NA / NA

Lab: BNW

ANIMAL ID: 8639

TRT#: 4

SEX: Male

DAY ON TEST: 253

DOSE: TRIOCT./OZONE

DISP: Moribund Sacrifice

HISTO: 26371

**ORGAN AND ACCOUNTABLE SITE STATUS**

**NORMAL**

* Larynx	* Lung	* Lymph Node, Bronchial	* Lymph Node, Mediastinal
* Trachea			

**OBSERVATIONS**

Brain	Cranial Nerve	Schwannoma Malignant	
[ Schwannoma Malignant TGLS = 2-7+8+9 ]			
* Lung	Note: TGL 4 (lung, left, dark), probably due to post-mortem hypostatic congestion, has no corresponding microscopic lesion. Thus NCL was recorded on IANR form.		
* Nose	Olfactory Epi	Degeneration	Hyaline, Minimal
	Goblet Cell, Lateral Wall	Hyperplasia	Minimal
	Lateral Wall	Hyperplasia	Minimal
Pituitary Gland		Schwannoma Malignant	Metastatic (Tissue Nos)
Note: TGL 1 is invasion of the pituitary by the malignant schwannoma arising from the intracranial part of the acoustic nerve.			
[ Schwannoma Malignant TGLS = 1-8+9 ]			
Skin	SOA, Subcut Tiss	Inflammation	Chronic, Minimal
[ Inflammation TGLS = 3-6 ]			

PRIMARY CAUSE OF DEATH

-

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 88034-07

Test Type: CHRONIC

Route: SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY

Species/Strain: Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

Test Compound: Ozone/NNK

CAS Number: OZONNNKCOMB

Date Report Requested: 10/21/2014

Time Report Requested: 05:28:18

First Dose M/F: NA / NA

Lab: BNW

ANIMAL ID: 8640

TRT#: 4

SEX: Male

DAY ON TEST: 631

DOSE: TRIOCT./OZONE

DISP: Moribund Sacrifice

HISTO: 26372

**ORGAN AND ACCOUNTABLE SITE STATUS**

**NORMAL**

\* Larynx

\* Lymph Node, Mediastinal

\* Trachea

**MISSING**

\* Lymph Node, Bronchial

**OBSERVATIONS**

Kidney [ Nephropathy TGLS = 2-9 ]		Nephropathy	Marked
* Lung	Interstitial	Fibrosis	Minimal
	Alveolar Epith	Metaplasia	Minimal
Lymph Node [ Hemorrhage TGLS = 5-9 ]	Renal	Hemorrhage	Mild
* Nose	Olfactory Epi	Degeneration	Hyaline, Mild
	Lateral Wall	Hyperplasia	Minimal
Peritoneum [ Inflammation TGLS = 6-6 ]		Inflammation	Chronic, Minimal
Pituitary Gland [ Adenoma TGLS = 1-8 ]	Pars Distalis	Adenoma	
Skin [ Inflammation TGLS = 7-7 ]	SOA, Subcut Tiss	Inflammation	Chronic, Minimal
Spleen [ Fibrosis TGLS = 3-8 ]		Fibrosis	Mild
Testes [ Adenoma TGLS = 4-8 ]	Interstit Cell	Adenoma	

PRIMARY CAUSE OF DEATH

- Kidney Nephropathy

\* PROTOCOL REQUIRED TISSUE



**Experiment Number:** 88034-07

**Test Type:** CHRONIC

**Route:** SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY

**Species/Strain:** Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

**Test Compound:** Ozone/NNK

**CAS Number:** OZONNNKCOMB

**Date Report Requested:** 10/21/2014

**Time Report Requested:** 05:28:18

**First Dose M/F:** NA / NA

**Lab:** BNW

**ANIMAL ID:** 8641

**TRT#:** 4

**SEX:** Male

**DAY ON TEST:** 614

**DOSE:** TRIOCT./OZONE

**DISP:** Moribund Sacrifice

**HISTO:** 26373

**ORGAN AND ACCOUNTABLE SITE STATUS**

**NORMAL**

\* Larynx \* Trachea

**MISSING**

\* Lymph Node, Bronchial \* Lymph Node, Mediastinal

**OBSERVATIONS**

Liver		Leukemia Mononuclear	
[ Leukemia Mononuclear TGLS = 4-8 ]			
* Lung	Interstitial	Fibrosis	Minimal
	Alveolar Epith	Metaplasia	Minimal
* Nose	Olfactory Epi	Degeneration	Hyaline, Mild
	Goblet Cell, Lateral Wall	Hyperplasia	Minimal
	Lateral Wall	Hyperplasia	Minimal
Peritoneum		Inflammation	Chronic, Minimal
[ Inflammation TGLS = 2-6 ]			
Skin	SOA, Subcut Tiss	Inflammation	Chronic, Minimal
[ Inflammation TGLS = 3-7 ]			
Testes	Interstit Cell	Adenoma	
[ Adenoma TGLS = 1-8 ]			

**PRIMARY CAUSE OF DEATH**

- UNCERTAIN

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 88034-07

Test Type: CHRONIC

Route: SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY

Species/Strain: Rat/F 344/N

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Test Compound: Ozone/NNK

CAS Number: OZONNNKCOMB

Date Report Requested: 10/21/2014

Time Report Requested: 05:28:18

First Dose M/F: NA / NA

Lab: BNW

ANIMAL ID: 8642

TRT#: 4

SEX: Male

DAY ON TEST: 722

DOSE: TRIOCT./OZONE

DISP: Natural Death

HISTO: 26374

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

\* Lymph Node, Mediastinal

Spleen

MISSING

\* Lymph Node, Bronchial

AUTO PRECLUDES DIAG.

\* Trachea

OBSERVATIONS

Intestine Large, Colon		Mineralization	Moderate
[ Mineralization TGLS = 9-12 ]			
Intestine Large, Rectum		Mineralization	Mild
[ Mineralization TGLS = 10-12 ]			
Kidney		Cyst	Mild
		Nephropathy	Marked
[ Cyst TGLS = 8-10 ]			
[ Nephropathy TGLS = 5-10 ]			
* Larynx		Mineralization	Moderate
Liver		Degeneration	Cystic, Minimal
[ Degeneration TGLS = 13-9 ]			
* Lung		Edema	Moderate
	Interstitialium	Inflammation	Chronic, Diffuse, Moderate
	Alveolar Epith	Metaplasia	Minimal
		Mineralization	Moderate
Mesentery	Fat	Necrosis	Moderate
Note: TGL #7 is fat necrosis in the mesentery rather than an enlarged mesenteric lymph node as indicated on the IANR form.			
[ Necrosis TGLS = 7-11 ]			
* Nose	Olfactory Epi	Degeneration	Hyaline, Mild
	Goblet Cell, Lateral Wall	Hyperplasia	Minimal
	Lateral Wall	Hyperplasia	Minimal
Parathyroid Gland		Hyperplasia	Marked
[ Hyperplasia TGLS = 12-7 ]			

\* PROTOCOL REQUIRED TISSUE

**Experiment Number:** 88034-07

**Test Type:** CHRONIC

**Route:** SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY

**Species/Strain:** Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

**Test Compound:** Ozone/NNK

**CAS Number:** OZONNNKCOMB

**Date Report Requested:** 10/21/2014

**Time Report Requested:** 05:28:18

**First Dose M/F:** NA / NA

**Lab:** BNW

**ANIMAL ID:** 8642

**TRT#:** 4

**SEX:** Male

**DAY ON TEST:** 722

**DOSE:** TRIOCT./OZONE

**DISP:** Natural Death

**HISTO:** 26374

**ORGAN AND ACCOUNTABLE SITE STATUS**

Pituitary Gland [ Adenoma TGLS = 1-7 ]	Pars Distalis	Adenoma	
Pleura		Mesothelioma Malignant	
Skin [ Inflammation TGLS = 6-6 ] [ Inflammation TGLS = 2-8 ]	Prepuce SOA, Subcut Tiss	Inflammation Inflammation	Suppurative, Moderate Chronic, Minimal
Spleen Note: No microscopic lesion corresponding to TGL #4 (spleen, focus, 8 x 3 mm, pale) was observed. Gross observation was probably post-mortem change.			
Stomach, Glandular [ Mineralization TGLS = 11-12 ]		Mineralization	Moderate
Testes [ Adenoma TGLS = 3-9 ]	Interstit Cell	Adenoma	

**PRIMARY CAUSE OF DEATH** - Kidney Nephropathy

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 88034-07

Test Type: CHRONIC

Route: SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY

Species/Strain: Rat/F 344/N

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Test Compound: Ozone/NNK

CAS Number: OZONNNKCOMB

Date Report Requested: 10/21/2014

Time Report Requested: 05:28:18

First Dose M/F: NA / NA

Lab: BNW

ANIMAL ID: 8643

TRT#: 4

SEX: Male

DAY ON TEST: 537

DOSE: TRIOCT./OZONE

DISP: Natural Death

HISTO: 26375

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

\* Larynx

\* Lymph Node, Mediastinal

\* Trachea

MISSING

\* Lymph Node, Bronchial

OBSERVATIONS

* Lung	Interstitial Alveolus Alveolar Epith	Fibrosis Infiltration Cellular Metaplasia Infiltration Cellular	Minimal Histiocyte, Minimal Minimal Plasma Cell, Mild
Lymph Node, Mandibular [ Infiltration Cellular TGLS = 1-8 ]			
* Nose	Olfactory Epi Goblet Cell, Lateral Wall Lateral Wall	Degeneration Hyperplasia Hyperplasia	Hyaline, Mild Minimal Minimal
Penis  [ Calculus Micro Observation Only TGLS = 3-9 ]		Calculus Gross Observation Calculus Micro Observation Only	
Pituitary Gland [ Adenoma TGLS = 2-8 ]	Pars Distalis	Adenoma	
Skin  [ Inflammation TGLS = 6-6 ] [ Sarcoma TGLS = 5-7 ]	SOA, Subcut Tiss SOA, Subcut Tiss	Inflammation Sarcoma	Chronic, Minimal
Urinary Bladder  [ Calculus Micro Observation Only TGLS = 4-8 ]		Calculus Gross Observation Calculus Micro Observation Only	

PRIMARY CAUSE OF DEATH

- Pituitary Gland Pars Distalis Adenoma

\* PROTOCOL REQUIRED TISSUE

**Experiment Number:** 88034-07

**Test Type:** CHRONIC

**Route:** SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY

**Species/Strain:** Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

**Test Compound:** Ozone/NNK

**CAS Number:** OZONNNKCOMB

**Date Report Requested:** 10/21/2014

**Time Report Requested:** 05:28:18

**First Dose M/F:** NA / NA

**Lab:** BNW

**ANIMAL ID:** 8644

**TRT#:** 4

**SEX:** Male

**DAY ON TEST:** 718

**DOSE:** TRIOCT./OZONE

**DISP:** Moribund Sacrifice

**HISTO:** 26376

**ORGAN AND ACCOUNTABLE SITE STATUS**

**NORMAL**

\* Larynx

\* Lymph Node, Mediastinal

\* Trachea

**MISSING**

\* Lymph Node, Bronchial

**OBSERVATIONS**

Kidney [ Nephropathy TGLS = 2-7 ]		Nephropathy	Marked
* Lung	Interstitial Alveolar Epith	Fibrosis Metaplasia	Minimal Minimal
* Nose	Olfactory Epi Lateral Wall Pars Distalis	Degeneration Hyperplasia Adenoma	Hyaline, Mild Minimal
Pituitary Gland [ Adenoma TGLS = 1-7 ]			
Skin [ Inflammation TGLS = 4-6 ]	SOA, Subcut Tiss	Inflammation	Chronic, Minimal
Spleen [ Fibrosis TGLS = 3-7 ]		Fibrosis	Mild

**PRIMARY CAUSE OF DEATH**

- Kidney Nephropathy

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 88034-07

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Date Report Requested: 10/21/2014

Test Type: CHRONIC

Test Compound: Ozone/NNK

Time Report Requested: 05:28:18

Route: SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY

CAS Number: OZONNNKCOMB

First Dose M/F: NA / NA

Species/Strain: Rat/F 344/N

Lab: BNW

ANIMAL ID: 8645

TRT#: 4

SEX: Male

DAY ON TEST: 529

DOSE: TRIOCT./OZONE

DISP: Moribund Sacrifice

HISTO: 26377

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

\* Larynx

\* Lymph Node, Bronchial

\* Lymph Node, Mediastinal

\* Trachea

OBSERVATIONS

\* Lung

Interstitial

Fibrosis

Minimal

Alveolus

Infiltration Cellular

Histiocyte, Minimal

Alveolar Epith

Metaplasia

Minimal

Lymph Node

Note: TGL 6 (enlarged renal lymph node) was not detected at trim, therefore no section was submitted.

\* Nose

Olfactory Epi

Degeneration

Hyaline, Mild

Goblet Cell, Lateral Wall

Hyperplasia

Minimal

Lateral Wall

Hyperplasia

Minimal

Peritoneum

Inflammation

Chronic, Minimal

[ Inflammation TGLS = 5-7 ]

Skin

Subcut Tiss

Fibroma

Chronic, Minimal

SOA, Subcut Tiss

Inflammation

Keratoacanthoma

[ Fibroma TGLS = 1-9 ]

[ Inflammation TGLS = 7-6 ]

[ Keratoacanthoma TGLS = 2-8 ]

Testes

Interstit Cell

Adenoma

[ Adenoma TGLS = 3,4-7 ]

PRIMARY CAUSE OF DEATH

- Skin Subcut Tiss Fibroma

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 88034-07

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Date Report Requested: 10/21/2014

Test Type: CHRONIC

Test Compound: Ozone/NNK

Time Report Requested: 05:28:18

Route: SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY

CAS Number: OZONNNKCOMB

First Dose M/F: NA / NA

Species/Strain: Rat/F 344/N

Lab: BNW

ANIMAL ID: 8646

TRT#: 4

SEX: Male

DAY ON TEST: 635

DOSE: TRIOCT./OZONE

DISP: Moribund Sacrifice

HISTO: 26378

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

\* Larynx

\* Lymph Node, Mediastinal

Penis

\* Trachea

MISSING

\* Lymph Node, Bronchial

OBSERVATIONS

Heart		Cardiomyopathy	Mild
[ Cardiomyopathy TGLS = 1-8 ]			
Liver		Leukemia Mononuclear	
[ Leukemia Mononuclear TGLS = 5-9 ]			
* Lung	Interstitium	Fibrosis	Minimal
		Leukemia Mononuclear	
* Nose	Alveolar Epith	Metaplasia	Minimal
	Olfactory Epi	Degeneration	Hyaline, Mild
	Goblet Cell, Lateral Wall	Hyperplasia	Minimal
	Lateral Wall	Hyperplasia	Minimal
Penis			
Note: No microscopic lesion corresponding to TGL #8 (penis,distended) was observed. Gross appearance probably was due to edema caused by preputial lesion.			
Peritoneum		Inflammation	Chronic, Minimal
[ Inflammation TGLS = 6-6 ]			
Pituitary Gland	Pars Distalis	Adenoma	
[ Adenoma TGLS = 2-10 ]			
Skin	Prepuce	Inflammation	Suppurative, Moderate
	SOA, Subcut Tiss	Inflammation	Chronic, Minimal
[ Inflammation TGLS = 7-7 ]			
Spleen		Leukemia Mononuclear	
[ Leukemia Mononuclear TGLS = 4-9 ]			
Testes	Interstit Cell	Adenoma	
[ Adenoma TGLS = 3-9 ]			

PRIMARY CAUSE OF DEATH - Spleen Leukemia Mononuclear

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 88034-07

Test Type: CHRONIC

Route: SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY

Species/Strain: Rat/F 344/N

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Test Compound: Ozone/NNK

CAS Number: OZONNNKCOMB

Date Report Requested: 10/21/2014

Time Report Requested: 05:28:18

First Dose M/F: NA / NA

Lab: BNW

ANIMAL ID: 8647

TRT#: 4

SEX: Male

DAY ON TEST: 560

DOSE: TRIOCT./OZONE

DISP: Moribund Sacrifice

HISTO: 26379

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

\* Larynx \* Trachea

OBSERVATIONS

Brain		Leukemia Mononuclear	
	[ Leukemia Mononuclear TGLS = 2-8 ]		
Liver		Leukemia Mononuclear	
	[ Leukemia Mononuclear TGLS = 9-7 ]		
* Lung	Interstitial	Fibrosis	Moderate
	Alveolar Epith	Leukemia Mononuclear	
		Metaplasia	Minimal
Note: Multifocal areas of fibrosis are present which are probably unrelated to ozone exposure.			
Lymph Node	Pancreatic	Leukemia Mononuclear	
	[ Leukemia Mononuclear TGLS = 6-10 ]		
* Lymph Node, Bronchial		Leukemia Mononuclear	
Lymph Node, Mandibular		Infiltration Cellular	Plasma Cell, Mild
	[ Infiltration Cellular TGLS = 1-10 ]		
* Lymph Node, Mediastinal		Leukemia Mononuclear	
Mesentery		Leukemia Mononuclear	
	[ Leukemia Mononuclear TGLS = 4-7 ]		
* Nose	Olfactory Epi	Degeneration	Hyaline, Mild
	Goblet Cell, Lateral Wall	Hyperplasia	Minimal
	Lateral Wall	Hyperplasia	Minimal
Peritoneum		Inflammation	Chronic, Minimal
	[ Inflammation TGLS = 10-8 ]		
Pituitary Gland	Pars Distalis	Adenoma	
	[ Adenoma TGLS = 3-9 ]		
Skin	SOA, Subcut Tiss	Inflammation	Chronic, Minimal
	[ Inflammation TGLS = 11-6 ]		
Spleen		Leukemia Mononuclear	
	[ Leukemia Mononuclear TGLS = 7-10 ]		

\* PROTOCOL REQUIRED TISSUE



**Experiment Number:** 88034-07

**Test Type:** CHRONIC

**Route:** SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY

**Species/Strain:** Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

**Test Compound:** Ozone/NNK

**CAS Number:** OZONNNKCOMB

**Date Report Requested:** 10/21/2014

**Time Report Requested:** 05:28:18

**First Dose M/F:** NA / NA

**Lab:** BNW

**ANIMAL ID:** 8647

**TRT#:** 4

**SEX:** Male

**DAY ON TEST:** 560

**DOSE:** TRIOCT./OZONE

**DISP:** Moribund Sacrifice

**HISTO:** 26379

**ORGAN AND ACCOUNTABLE SITE STATUS**

Stomach, Forestomach

[ Ulcer TGLS = 12-11 ]

Ulcer

Moderate

Stomach, Glandular

[ Necrosis TGLS = 8-11 ]

Necrosis

Mild

Testes

[ Leukemia Mononuclear TGLS = 5-9 ]

Leukemia Mononuclear

PRIMARY CAUSE OF DEATH

- Spleen Leukemia Mononuclear

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 88034-07

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Date Report Requested: 10/21/2014

Test Type: CHRONIC

Test Compound: Ozone/NNK

Time Report Requested: 05:28:18

Route: SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY

CAS Number: OZONNNKCOMB

First Dose M/F: NA / NA

Species/Strain: Rat/F 344/N

Lab: BNW

ANIMAL ID: 8648

TRT#: 4

SEX: Male

DAY ON TEST: 487

DOSE: TRIOCT./OZONE

DISP: Moribund Sacrifice

HISTO: 26380

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

\* Larynx \* Trachea

OBSERVATIONS

Liver		Leukemia Mononuclear	
[ Leukemia Mononuclear TGLS = 5-10 ]			
* Lung	Interstitial	Fibrosis	Minimal
	Alveolar Epith	Leukemia Mononuclear	
[ Leukemia Mononuclear TGLS = 2,3-7+3 ]		Metaplasia	Minimal
Lymph Node	Pancreatic	Leukemia Mononuclear	
	Renal	Leukemia Mononuclear	
[ Leukemia Mononuclear TGLS = 9-10 ]			
[ Leukemia Mononuclear TGLS = 6-11 ]			
* Lymph Node, Bronchial		Leukemia Mononuclear	
* Lymph Node, Mediastinal		Leukemia Mononuclear	
[ Leukemia Mononuclear TGLS = 4-2 ]			
Lymph Node, Mesenteric		Leukemia Mononuclear	
[ Leukemia Mononuclear TGLS = 8-12 ]			
* Nose	Olfactory Epi	Degeneration	Hyaline, Mild
	Goblet Cell, Lateral Wall	Hyperplasia	Minimal
	Lateral Wall	Hyperplasia	Minimal
Preputial Gland		Adenoma	
		Leukemia Mononuclear	
[ Leukemia Mononuclear TGLS = 1-9 ]			
Skin	SOA, Subcut Tiss	Inflammation	Chronic, Minimal
[ Inflammation TGLS = 10-6 ]			
Spleen		Leukemia Mononuclear	
[ Leukemia Mononuclear TGLS = 7,11-8 ]			

PRIMARY CAUSE OF DEATH - Spleen Leukemia Mononuclear

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 88034-07

Test Type: CHRONIC

Route: SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY

Species/Strain: Rat/F 344/N

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Test Compound: Ozone/NNK

CAS Number: OZONNNKCOMB

Date Report Requested: 10/21/2014

Time Report Requested: 05:28:18

First Dose M/F: NA / NA

Lab: BNW

ANIMAL ID: 8801

TRT#: 5

SEX: Male

DAY ON TEST: 736

DOSE: .1M/KNK/OZONE

DISP: Terminal Sacrifice

HISTO: 26381

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

\* Larynx

\* Lymph Node, Bronchial

\* Lymph Node, Mediastinal

\* Trachea

OBSERVATIONS

Liver		Vacuolization Cytoplasmic	Mild
[ Vacuolization Cytoplasmic TGLS = 5-10 ]			
* Lung	Interstitialium	Fibrosis	Minimal
	Alveolar Epith	Metaplasia	Minimal
* Nose	Olfactory Epi	Degeneration	Hyaline, Mild
	Goblet Cell, Lateral Wall	Hyperplasia	Minimal
	Lateral Wall	Hyperplasia	Minimal
		Inflammation	Suppurative, Mild
Peritoneum		Inflammation	Chronic, Minimal
[ Inflammation TGLS = 6-7 ]			
Skin	SOA, Subcut Tiss	Inflammation	Chronic, Minimal
		Inflammation	Chronic, Moderate
[ Inflammation TGLS = 8-8 ]			
[ Inflammation TGLS = 7-6 ]			
Spleen		Congestion	Mild
		Fibrosis	Moderate
[ Congestion TGLS = 2-11 ]			
[ Fibrosis TGLS = 9-11 ]			
Testes	Interstit Cell	Adenoma	
[ Adenoma TGLS = 3,4-9 ]			

PRIMARY CAUSE OF DEATH

-

\* PROTOCOL REQUIRED TISSUE



Experiment Number: 88034-07

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Date Report Requested: 10/21/2014

Test Type: CHRONIC

Test Compound: Ozone/NNK

Time Report Requested: 05:28:18

Route: SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY

CAS Number: OZONNNKCOMB

First Dose M/F: NA / NA

Species/Strain: Rat/F 344/N

Lab: BNW

ANIMAL ID: 8803

TRT#: 5

SEX: Male

DAY ON TEST: 673

DOSE: .1M/KNNK/OZONE

DISP: Moribund Sacrifice

HISTO: 26383

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

\* Larynx

\* Lymph Node, Bronchial

\* Lymph Node, Mediastinal

\* Trachea

OBSERVATIONS

Liver		Leukemia Mononuclear	
[ Leukemia Mononuclear TGLS = 5-8 ]			
* Lung	Interstitial	Fibrosis	Minimal
	Alveolar Epith	Hyperplasia	Atypical, Mild
		Leukemia Mononuclear	
	Alveolar Epith	Metaplasia	Minimal
[ Hyperplasia TGLS = 9-8 ]			
Lymph Node, Mesenteric		Leukemia Mononuclear	
[ Leukemia Mononuclear TGLS = 8-10 ]			
Mesentery	Fat	Necrosis	Minimal
[ Necrosis TGLS = 4-9 ]			
* Nose	Olfactory Epi	Degeneration	Hyaline, Mild
	Goblet Cell, Lateral Wall	Hyperplasia	Minimal
	Lateral Wall	Hyperplasia	Minimal
Peritoneum		Inflammation	Chronic, Minimal
[ Inflammation TGLS = 6-7 ]			
Skin	SOA, Subcut Tiss	Inflammation	Chronic, Minimal
[ Inflammation TGLS = 7-6 ]			
Spleen		Leukemia Mononuclear	
[ Leukemia Mononuclear TGLS = 2-8 ]			
Testes	Interstit Cell	Adenoma	
		Leukemia Mononuclear	
[ Leukemia Mononuclear TGLS = 3-10 ]			

PRIMARY CAUSE OF DEATH

- Spleen Leukemia Mononuclear

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 88034-07

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Date Report Requested: 10/21/2014

Test Type: CHRONIC

Test Compound: Ozone/NNK

Time Report Requested: 05:28:18

Route: SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY

CAS Number: OZONNNKCOMB

First Dose M/F: NA / NA

Species/Strain: Rat/F 344/N

Lab: BNW

ANIMAL ID: 8804

TRT#: 5

SEX: Male

DAY ON TEST: 549

DOSE: .1M/KNNK/OZONE

DISP: Moribund Sacrifice

HISTO: 26384

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

\* Larynx \* Trachea

OBSERVATIONS

Heart		Leukemia Mononuclear	
[ Leukemia Mononuclear TGLS = 4-8 ]			
Kidney		Infarct	Mild
		Leukemia Mononuclear	
		Nephropathy	Mild
[ Infarct TGLS = 7-9 ]			
Liver		Leukemia Mononuclear	
[ Leukemia Mononuclear TGLS = 6-9 ]			
* Lung	Interstitial	Fibrosis	Minimal
		Leukemia Mononuclear	
	Alveolar Epith	Metaplasia	Minimal
Lymph Node	Renal	Leukemia Mononuclear	
		Leukemia Mononuclear	
Note: TGL 11 is mononuclear cell leukemia in an axillary lymph node. There is no site designation for axillary under lymph node.			
[ Leukemia Mononuclear TGLS = 10-10 ]			
[ Leukemia Mononuclear TGLS = 11-11 ]			
* Lymph Node, Bronchial		Leukemia Mononuclear	
Lymph Node, Mandibular		Leukemia Mononuclear	
[ Leukemia Mononuclear TGLS = 2-8 ]			
* Lymph Node, Mediastinal		Leukemia Mononuclear	
Lymph Node, Mesenteric		Inflammation	Granulomatous, Moderate
		Leukemia Mononuclear	
[ Inflammation TGLS = 13-12 ]			
Mesentery		Leukemia Mononuclear	
[ Leukemia Mononuclear TGLS = 8-13 ]			
* Nose	Olfactory Epi	Degeneration	Hyaline, Mild
	Goblet Cell, Lateral Wall	Hyperplasia	Minimal

\* PROTOCOL REQUIRED TISSUE

**Experiment Number:** 88034-07

**Test Type:** CHRONIC

**Route:** SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY

**Species/Strain:** Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

**Test Compound:** Ozone/NNK

**CAS Number:** OZONNNKCOMB

**Date Report Requested:** 10/21/2014

**Time Report Requested:** 05:28:18

**First Dose M/F:** NA / NA

**Lab:** BNW

**ANIMAL ID:** 8804

**TRT#:** 5

**SEX:** Male

**DAY ON TEST:** 549

**DOSE:** .1M/KNNK/OZONE

**DISP:** Moribund Sacrifice

**HISTO:** 26384

**ORGAN AND ACCOUNTABLE SITE STATUS**

Lateral Wall

Hyperplasia

Minimal

Thrombosis

Marked

Peritoneum

Inflammation

Chronic, Minimal

[ Inflammation TGLS = 9-10 ]

Skin

Hyperkeratosis

Moderate

SOA, Subcut Tiss

Inflammation

Chronic, Minimal

Note: Hyperkeratosis is present only on the skin of the tail.

[ Hyperkeratosis TGLS = 1-7 ]

[ Inflammation TGLS = 12-6 ]

Spleen

Leukemia Mononuclear

[ Leukemia Mononuclear TGLS = 5-9 ]

Thymus

Leukemia Mononuclear

[ Leukemia Mononuclear TGLS = 3-2 ]

**PRIMARY CAUSE OF DEATH**

- Spleen Leukemia Mononuclear

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 88034-07

Test Type: CHRONIC

Route: SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY

Species/Strain: Rat/F 344/N

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Test Compound: Ozone/NNK

CAS Number: OZONNNKCOMB

Date Report Requested: 10/21/2014

Time Report Requested: 05:28:18

First Dose M/F: NA / NA

Lab: BNW

ANIMAL ID: 8805

TRT#: 5

SEX: Male

DAY ON TEST: 736

DOSE: .1M/KNNK/OZONE

DISP: Terminal Sacrifice

HISTO: 26385

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

\* Lymph Node, Mediastinal

\* Trachea

MISSING

\* Lymph Node, Bronchial

OBSERVATIONS

Kidney		Nephropathy	Moderate
[ Nephropathy TGLS = 4-7 ]			
* Larynx		Inflammation	Suppurative, Minimal
Liver		Degeneration	Cystic, Mild
		Leukemia Mononuclear	
[ Degeneration TGLS = 6-9 ]			
* Lung		Alveolar/Bronchiolar Adenoma	
	Interstitial	Fibrosis	Minimal
	Alveolar Epith	Hyperplasia	Atypical, Mild
	Alveolar Epith	Metaplasia	Minimal
* Nose	Olfactory Epi	Degeneration	Hyaline, Mild
	Goblet Cell, Lateral Wall	Hyperplasia	Minimal
	Lateral Wall	Hyperplasia	Minimal
Pituitary Gland	Pars Distalis	Adenoma	
[ Adenoma TGLS = 1-8 ]			
Skin	SOA, Subcut Tiss	Inflammation	Chronic, Minimal
[ Inflammation TGLS = 5-6 ]			
Spleen		Fibrosis	Mild
		Leukemia Mononuclear	
[ Fibrosis TGLS = 2-8 ]			
[ Leukemia Mononuclear TGLS = 3-8 ]			

PRIMARY CAUSE OF DEATH

-

\* PROTOCOL REQUIRED TISSUE



Experiment Number: 88034-07

Test Type: CHRONIC

Route: SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY

Species/Strain: Rat/F 344/N

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Test Compound: Ozone/NNK

CAS Number: OZONNNKCOMB

Date Report Requested: 10/21/2014

Time Report Requested: 05:28:18

First Dose M/F: NA / NA

Lab: BNW

ANIMAL ID: 8806

TRT#: 5

SEX: Male

DAY ON TEST: 697

DOSE: .1M/KNNK/OZONE

DISP: Moribund Sacrifice

HISTO: 26386

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

\* Larynx

\* Lymph Node, Mediastinal

\* Trachea

MISSING

\* Lymph Node, Bronchial

OBSERVATIONS

Liver		Leukemia Mononuclear	
[ Leukemia Mononuclear TGLS = 1-8 ]			
* Lung	Interstitial	Fibrosis	Minimal
	Alveolar Epith	Hyperplasia	Atypical, Minimal
	Alveolus	Infiltration Cellular	Histiocyte, Minimal
		Leukemia Mononuclear	
* Nose	Alveolar Epith	Metaplasia	Minimal
	Olfactory Epi	Degeneration	Hyaline, Mild
	Goblet Cell, Lateral Wall	Hyperplasia	Minimal
	Lateral Wall	Hyperplasia	Minimal
Peritoneum		Inflammation	Chronic, Minimal
[ Inflammation TGLS = 3-7 ]			
Skin	SOA, Subcut Tiss	Inflammation	Chronic, Minimal
[ Inflammation TGLS = 5-6 ]			
Spleen		Leukemia Mononuclear	
[ Leukemia Mononuclear TGLS = 4-8 ]			
Testes	Interstit Cell	Adenoma	
[ Adenoma TGLS = 2-8 ]			

PRIMARY CAUSE OF DEATH - Spleen Leukemia Mononuclear

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 88034-07

Test Type: CHRONIC

Route: SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY

Species/Strain: Rat/F 344/N

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Test Compound: Ozone/NNK

CAS Number: OZONNNKCOMB

Date Report Requested: 10/21/2014

Time Report Requested: 05:28:18

First Dose M/F: NA / NA

Lab: BNW

ANIMAL ID: 8807

TRT#: 5

SEX: Male

DAY ON TEST: 460

DOSE: .1M/KNNK/OZONE

DISP: Moribund Sacrifice

HISTO: 26387

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

\* Larynx \* Trachea

OBSERVATIONS

Liver		Leukemia Mononuclear	
[ Leukemia Mononuclear TGLS = 5-7 ]			
* Lung	Interstitial	Fibrosis	Minimal
	Alveolus	Infiltration Cellular	Histiocyte, Minimal
		Leukemia Mononuclear	
	Alveolar Epith	Metaplasia	Minimal
Lymph Node	Iliac	Leukemia Mononuclear	
[ Leukemia Mononuclear TGLS = 6-9 ]			
* Lymph Node, Bronchial		Leukemia Mononuclear	
Lymph Node, Mandibular		Leukemia Mononuclear	
[ Leukemia Mononuclear TGLS = 1-7 ]			
* Lymph Node, Mediastinal		Leukemia Mononuclear	
Lymph Node, Mesenteric		Leukemia Mononuclear	
[ Leukemia Mononuclear TGLS = 7-8 ]			
* Nose	Olfactory Epi	Degeneration	Hyaline, Mild
	Goblet Cell, Lateral Wall	Hyperplasia	Minimal
	Lateral Wall	Hyperplasia	Minimal
Pituitary Gland		Leukemia Mononuclear	
[ Leukemia Mononuclear TGLS = 3-7 ]			
Skin	SOA, Subcut Tiss	Inflammation	Chronic, Minimal
[ Inflammation TGLS = 8-6 ]			
Spleen		Leukemia Mononuclear	
[ Leukemia Mononuclear TGLS = 4-8 ]			
Thymus		Leukemia Mononuclear	
[ Leukemia Mononuclear TGLS = 2-2 ]			

PRIMARY CAUSE OF DEATH - Spleen Leukemia Mononuclear

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 88034-07

Test Type: CHRONIC

Route: SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY

Species/Strain: Rat/F 344/N

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Test Compound: Ozone/NNK

CAS Number: OZONNNKCOMB

Date Report Requested: 10/21/2014

Time Report Requested: 05:28:18

First Dose M/F: NA / NA

Lab: BNW

ANIMAL ID: 8808

TRT#: 5

SEX: Male

DAY ON TEST: 671

DOSE: .1M/KNK/OZONE

DISP: Moribund Sacrifice

HISTO: 26388

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

\* Larynx

\* Lymph Node, Bronchial

\* Lymph Node, Mediastinal

\* Trachea

OBSERVATIONS

\* Lung

Interstitial

Fibrosis

Minimal

Alveolar Epith

Metaplasia

Minimal

\* Nose

Olfactory Epi

Degeneration

Hyaline, Mild

Goblet Cell, Lateral Wall

Hyperplasia

Minimal

Lateral Wall

Hyperplasia

Minimal

Peritoneum

Inflammation

Chronic, Minimal

[ Inflammation TGLS = 6-7 ]

Pituitary Gland

Pars Distalis

Adenoma

[ Adenoma TGLS = 3-8 ]

Skin

SOA, Subcut Tiss

Inflammation

Chronic, Minimal

[ Inflammation TGLS = 7-6 ]

Spleen

Leukemia Mononuclear

[ Leukemia Mononuclear TGLS = 4-8 ]

Stomach, Forestomach

Inflammation

Chronic Active, Moderate

[ Inflammation TGLS = 5-8 ]

Testes

Interstit Cell

Adenoma

[ Adenoma TGLS = 8-8 ]

PRIMARY CAUSE OF DEATH

- Pituitary Gland Pars Distalis Adenoma

\* PROTOCOL REQUIRED TISSUE



**Experiment Number:** 88034-07

**Test Type:** CHRONIC

**Route:** SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY

**Species/Strain:** Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

**Test Compound:** Ozone/NNK

**CAS Number:** OZONNNKCOMB

**Date Report Requested:** 10/21/2014

**Time Report Requested:** 05:28:18

**First Dose M/F:** NA / NA

**Lab:** BNW

**ANIMAL ID:** 8809

**TRT#:** 5

**SEX:** Male

**DAY ON TEST:** 698

**DOSE:** .1M/KNNK/OZONE

**DISP:** Moribund Sacrifice

**HISTO:** 26389

**ORGAN AND ACCOUNTABLE SITE STATUS**

Skin		Basal Cell Adenoma	
	SOA, Subcut Tiss	Inflammation	Chronic, Minimal
[ Basal Cell Adenoma TGLS = 3-9 ]			
[ Inflammation TGLS = 13-6 ]			
Spleen		Leukemia Mononuclear	
[ Leukemia Mononuclear TGLS = 7,8-8 ]			
Testes	Interstit Cell	Adenoma	
[ Adenoma TGLS = 6-7 ]			
PRIMARY CAUSE OF DEATH	- Spleen	Leukemia Mononuclear	

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 88034-07

Test Type: CHRONIC

Route: SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY

Species/Strain: Rat/F 344/N

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Test Compound: Ozone/NNK

CAS Number: OZONNNKCOMB

Date Report Requested: 10/21/2014

Time Report Requested: 05:28:18

First Dose M/F: NA / NA

Lab: BNW

ANIMAL ID: 8810

TRT#: 5

SEX: Male

DAY ON TEST: 669

DOSE: .1M/KNNK/OZONE

DISP: Moribund Sacrifice

HISTO: 26390

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

\* Larynx

\* Lymph Node, Mediastinal

\* Trachea

MISSING

\* Lymph Node, Bronchial

OBSERVATIONS

Kidney [ Nephropathy TGLS = 2-8 ]		Nephropathy	Marked
Liver [ Vacuolization Cytoplasmic TGLS = 5-9 ]		Degeneration Vacuolization Cytoplasmic	Cystic, Mild Moderate
* Lung	Interstitial Alveolar Epith Alveolar Epith	Fibrosis Hyperplasia Metaplasia	Minimal Atypical, Minimal Minimal
Lymph Node [ Infiltration Cellular TGLS = 6-9 ]	Renal	Infiltration Cellular	Plasma Cell, Mild
* Nose	Olfactory Epi Goblet Cell, Lateral Wall Lateral Wall	Degeneration Hyperplasia Hyperplasia Hyperplasia	Hyaline, Mild Minimal Minimal Marked
Parathyroid Gland [ Hyperplasia TGLS = 1-8 ]			
Peritoneum [ Inflammation TGLS = 7-7 ]		Inflammation	Chronic, Minimal
Pituitary Gland [ Adenoma TGLS = 3-8 ]	Pars Distalis	Adenoma	
Skin [ Inflammation TGLS = 8-6 ]	SOA, Subcut Tiss	Inflammation	Chronic, Minimal
Testes [ Adenoma TGLS = 4-8 ]	Interstit Cell	Adenoma	

PRIMARY CAUSE OF DEATH

- Kidney Nephropathy

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 88034-07

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Date Report Requested: 10/21/2014

Test Type: CHRONIC

Test Compound: Ozone/NNK

Time Report Requested: 05:28:18

Route: SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY

CAS Number: OZONNNKCOMB

First Dose M/F: NA / NA

Species/Strain: Rat/F 344/N

Lab: BNW

ANIMAL ID: 8811

TRT#: 5

SEX: Male

DAY ON TEST: 583

DOSE: .1M/KNNK/OZONE

DISP: Moribund Sacrifice

HISTO: 26391

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

Adrenal Cortex

\* Larynx

\* Trachea

MISSING

\* Lymph Node, Bronchial

OBSERVATIONS

Liver		Leukemia Mononuclear	
[ Leukemia Mononuclear TGLS = 6,7-7 ]			
* Lung	Interstitial	Fibrosis	Minimal
	Alveolar Epith	Leukemia Mononuclear	
		Metaplasia	Minimal
* Lymph Node, Mediastinal		Leukemia Mononuclear	
Lymph Node, Mesenteric		Leukemia Mononuclear	
[ Leukemia Mononuclear TGLS = 9-8 ]			
Mesentery		Leukemia Mononuclear	
	Fat	Necrosis	Moderate
[ Necrosis TGLS = 5-7 ]			
* Nose	Olfactory Epi	Degeneration	Hyaline, Moderate
	Goblet Cell, Lateral Wall	Hyperplasia	Minimal
	Lateral Wall	Hyperplasia	Minimal
Skin	SOA, Subcut Tiss	Inflammation	Chronic, Minimal
[ Inflammation TGLS = 8-6 ]			
Spleen		Leukemia Mononuclear	
[ Leukemia Mononuclear TGLS = 4-7 ]			
Thymus		Leukemia Mononuclear	
[ Leukemia Mononuclear TGLS = 2-2 ]			

PRIMARY CAUSE OF DEATH

- Spleen Leukemia Mononuclear

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 88034-07

Test Type: CHRONIC

Route: SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY

Species/Strain: Rat/F 344/N

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Test Compound: Ozone/NNK

CAS Number: OZONNNKCOMB

Date Report Requested: 10/21/2014

Time Report Requested: 05:28:18

First Dose M/F: NA / NA

Lab: BNW

ANIMAL ID: 8812

TRT#: 5

SEX: Male

DAY ON TEST: 569

DOSE: .1M/KNNK/OZONE

DISP: Moribund Sacrifice

HISTO: 26392

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

\* Larynx \* Trachea

OBSERVATIONS

Liver		Leukemia Mononuclear	
[ Leukemia Mononuclear TGLS = 5-7 ]			
* Lung	Interstitial	Fibrosis	Minimal
	Alveolar Epith	Leukemia Mononuclear	
[ Leukemia Mononuclear TGLS = 10-3 ]		Metaplasia	Minimal
Lymph Node	Renal	Leukemia Mononuclear	
[ Leukemia Mononuclear TGLS = 6-8 ]			
* Lymph Node, Bronchial		Leukemia Mononuclear	
Lymph Node, Mandibular		Leukemia Mononuclear	
[ Leukemia Mononuclear TGLS = 1-7 ]			
* Lymph Node, Mediastinal		Leukemia Mononuclear	
Lymph Node, Mesenteric		Leukemia Mononuclear	
[ Leukemia Mononuclear TGLS = 9-9 ]			
* Nose	Olfactory Epi	Degeneration	Hyaline, Mild
	Goblet Cell, Lateral Wall	Hyperplasia	Minimal
	Lateral Wall	Hyperplasia	Minimal
Penis		Calculus Micro Observation Only	
[ Calculus Micro Observation Only TGLS = 2-8 ]			
Peritoneum		Inflammation	Chronic, Minimal
[ Inflammation TGLS = 8-9 ]			
Skin	SOA, Subcut Tiss	Inflammation	Chronic, Minimal
[ Inflammation TGLS = 7-6 ]			
Spleen		Leukemia Mononuclear	
[ Leukemia Mononuclear TGLS = 4-7 ]			
Testes	Interstit Cell	Adenoma	
[ Adenoma TGLS = 3-7 ]			

\* PROTOCOL REQUIRED TISSUE



**Experiment Number:** 88034-07

**Test Type:** CHRONIC

**Route:** SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY

**Species/Strain:** Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

**Test Compound:** Ozone/NNK

**CAS Number:** OZONNNKCOMB

**Date Report Requested:** 10/21/2014

**Time Report Requested:** 05:28:18

**First Dose M/F:** NA / NA

**Lab:** BNW

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**ANIMAL ID:** 8812

**TRT#:** 5

**SEX:** Male

**DAY ON TEST:** 569

**DOSE:** .1M/KNNK/OZONE

**DISP:** Moribund Sacrifice

**HISTO:** 26392

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**ORGAN AND ACCOUNTABLE SITE STATUS**

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PRIMARY CAUSE OF DEATH

- Spleen Leukemia Mononuclear

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\* PROTOCOL REQUIRED TISSUE

**Experiment Number:** 88034-07

**Test Type:** CHRONIC

**Route:** SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY

**Species/Strain:** Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

**Test Compound:** Ozone/NNK

**CAS Number:** OZONNNKCOMB

**Date Report Requested:** 10/21/2014

**Time Report Requested:** 05:28:18

**First Dose M/F:** NA / NA

**Lab:** BNW

**ANIMAL ID:** 8813

**TRT#:** 5

**SEX:** Male

**DAY ON TEST:** 234

**DOSE:** .1M/KNNK/OZONE

**DISP:** Moribund Sacrifice

**HISTO:** 26393

**ORGAN AND ACCOUNTABLE SITE STATUS**

**NORMAL**

\* Larynx

\* Lymph Node, Mediastinal

\* Trachea

**MISSING**

\* Lymph Node, Bronchial

**OBSERVATIONS**

\* Lung

Interstitial

Fibrosis

Minimal

Alveolar Epith

Metaplasia

Minimal

Note: No microscopic lesion corresponding to TGL #1 was observed in the lung. Therefore NCL was entered for TGL 1 on IANR form.

\* Nose

Olfactory Epi

Degeneration

Hyaline, Minimal

Goblet Cell, Lateral Wall

Hyperplasia

Minimal

Lateral Wall

Hyperplasia

Minimal

Skin

SOA, Subcut Tiss

Inflammation

Chronic, Minimal

SOA, Subcut Tiss

Sarcoma

[ Inflammation TGLS = 3-6 ]

[ Sarcoma TGLS = 2-7+8 ]

**PRIMARY CAUSE OF DEATH**

- Skin SOA Subcut Tiss Sarcoma

\* PROTOCOL REQUIRED TISSUE

**Experiment Number:** 88034-07

**Test Type:** CHRONIC

**Route:** SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY

**Species/Strain:** Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

**Test Compound:** Ozone/NNK

**CAS Number:** OZONNNKCOMB

**Date Report Requested:** 10/21/2014

**Time Report Requested:** 05:28:18

**First Dose M/F:** NA / NA

**Lab:** BNW

**ANIMAL ID:** 8814

**TRT#:** 5

**SEX:** Male

**DAY ON TEST:** 710

**DOSE:** .1M/KNNK/OZONE

**DISP:** Moribund Sacrifice

**HISTO:** 26394

**ORGAN AND ACCOUNTABLE SITE STATUS**

**NORMAL**

\* Larynx

\* Lymph Node, Mediastinal

\* Trachea

**MISSING**

\* Lymph Node, Bronchial

**OBSERVATIONS**

Kidney [ Nephropathy TGLS = 4-8 ]		Nephropathy	Moderate
Liver [ Leukemia Mononuclear TGLS = 3-9 ]		Leukemia Mononuclear	
* Lung [ Hyperplasia TGLS = 7-8 ]	Interstitial Alveolar Epith Alveolar Epith	Fibrosis Hyperplasia Metaplasia	Minimal Atypical, Mild Minimal
* Nose [ Inflammation TGLS = 5-7 ]	Olfactory Epi Goblet Cell, Lateral Wall Lateral Wall	Degeneration Hyperplasia Hyperplasia Inflammation	Hyaline, Mild Minimal Minimal Chronic, Minimal
Pituitary Gland [ Adenoma TGLS = 1-9 ]	Pars Distalis	Adenoma	
Skin [ Inflammation TGLS = 6-6 ]	SOA, Subcut Tiss	Inflammation	Chronic, Minimal
Spleen [ Leukemia Mononuclear TGLS = 2-8 ]		Leukemia Mononuclear	

**PRIMARY CAUSE OF DEATH**

- Spleen Leukemia Mononuclear

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 88034-07

Test Type: CHRONIC

Route: SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY

Species/Strain: Rat/F 344/N

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Test Compound: Ozone/NNK

CAS Number: OZONNNKCOMB

Date Report Requested: 10/21/2014

Time Report Requested: 05:28:18

First Dose M/F: NA / NA

Lab: BNW

ANIMAL ID: 8815

TRT#: 5

SEX: Male

DAY ON TEST: 605

DOSE: .1M/KNNK/OZONE

DISP: Moribund Sacrifice

HISTO: 26395

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

\* Larynx \* Trachea

OBSERVATIONS

Liver		Leukemia Mononuclear	
[ Leukemia Mononuclear TGLS = 4-8 ]			
* Lung	Interstitial	Fibrosis	Minimal
	Alveolar Epith	Hyperplasia	Atypical, Mild
	Alveolus	Infiltration Cellular	Histiocyte, Mild
		Leukemia Mononuclear	
	Alveolar Epith	Metaplasia	Minimal
* Lymph Node, Bronchial		Leukemia Mononuclear	
* Lymph Node, Mediastinal		Leukemia Mononuclear	
[ Leukemia Mononuclear TGLS = 2-2 ]			
Lymph Node, Mesenteric		Leukemia Mononuclear	
[ Leukemia Mononuclear TGLS = 12-11 ]			
* Nose	Olfactory Epi	Degeneration	Hyaline, Mild
	Goblet Cell, Lateral Wall	Hyperplasia	Minimal
	Lateral Wall	Hyperplasia	Minimal
Peritoneum		Inflammation	Chronic, Minimal
[ Inflammation TGLS = 10-6 ]			
Pituitary Gland		Leukemia Mononuclear	
[ Leukemia Mononuclear TGLS = 3-8 ]			
Skin	Prepuce	Inflammation	Suppurative, Mild
	SOA, Subcut Tiss	Inflammation	Chronic, Minimal
[ Inflammation TGLS = 11-7 ]			
[ Inflammation TGLS = 1-8 ]			
Spleen		Leukemia Mononuclear	
[ Leukemia Mononuclear TGLS = 5,6,7-9+10 ]			
Testes	Interstit Cell	Adenoma	
		Atrophy	Moderate

\* PROTOCOL REQUIRED TISSUE

**Experiment Number:** 88034-07

**Test Type:** CHRONIC

**Route:** SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY

**Species/Strain:** Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

**Test Compound:** Ozone/NNK

**CAS Number:** OZONNNKCOMB

**Date Report Requested:** 10/21/2014

**Time Report Requested:** 05:28:18

**First Dose M/F:** NA / NA

**Lab:** BNW

---

**ANIMAL ID:** 8815

**TRT#:** 5

**SEX:** Male

**DAY ON TEST:** 605

**DOSE:** .1M/KNNK/OZONE

**DISP:** Moribund Sacrifice

**HISTO:** 26395

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**ORGAN AND ACCOUNTABLE SITE STATUS**

---

[ Adenoma TGLS = 9-8 ]

[ Atrophy TGLS = 8-8 ]

---

**PRIMARY CAUSE OF DEATH**

- Spleen Leukemia Mononuclear

---

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 88034-07

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Date Report Requested: 10/21/2014

Test Type: CHRONIC

Test Compound: Ozone/NNK

Time Report Requested: 05:28:18

Route: SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY

CAS Number: OZONNNKCOMB

First Dose M/F: NA / NA

Species/Strain: Rat/F 344/N

Lab: BNW

ANIMAL ID: 8816

TRT#: 5

SEX: Male

DAY ON TEST: 662

DOSE: .1M/KNNK/OZONE

DISP: Moribund Sacrifice

HISTO: 26396

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

\* Larynx

\* Lymph Node, Mediastinal

\* Trachea

MISSING

\* Lymph Node, Bronchial

OBSERVATIONS

Kidney		Nephropathy	Marked
[ Nephropathy TGLS = 5-9 ]			
Liver		Angiectasis	Mild
[ Angiectasis TGLS = 4-10 ]			
* Lung	Interstitial	Fibrosis	Minimal
	Alveolar Epith	Metaplasia	Minimal
Note: No microscopic lesion corresponding to TGL #2 (lung, bilateral, mottled) was observed. Gross observation probably due to incomplete blood drainage from lung.			
* Nose	Olfactory Epi	Degeneration	Hyaline, Mild
	Goblet Cell, Lateral Wall	Hyperplasia	Minimal
	Lateral Wall	Hyperplasia	Minimal
Pituitary Gland	Pars Distalis	Adenoma	
[ Adenoma TGLS = 3-8 ]			
Skin	Dermis	Cyst	Moderate
	SOA, Subcut Tiss	Inflammation	Chronic, Minimal
[ Cyst TGLS = 7-7 ]			
[ Inflammation TGLS = 8-6 ]			
Testes		Atrophy	Moderate
[ Atrophy TGLS = 6-8 ]			

PRIMARY CAUSE OF DEATH

- Pituitary Gland Pars Distalis Adenoma

\* PROTOCOL REQUIRED TISSUE

**Experiment Number:** 88034-07

**Test Type:** CHRONIC

**Route:** SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY

**Species/Strain:** Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

**Test Compound:** Ozone/NNK

**CAS Number:** OZONNNKCOMB

**Date Report Requested:** 10/21/2014

**Time Report Requested:** 05:28:18

**First Dose M/F:** NA / NA

**Lab:** BNW

**ANIMAL ID:** 8817

**TRT#:** 5

**SEX:** Male

**DAY ON TEST:** 683

**DOSE:** .1M/KNNK/OZONE

**DISP:** Moribund Sacrifice

**HISTO:** 26397

**ORGAN AND ACCOUNTABLE SITE STATUS**

**NORMAL**

\* Larynx

\* Lymph Node, Bronchial

\* Trachea

**OBSERVATIONS**

Kidney [ Nephropathy TGLS = 2-7 ]		Nephropathy	Marked
* Lung	Interstitial Alveolar Epith Alveolar Epith	Fibrosis Hyperplasia Metaplasia	Minimal Atypical, Minimal Minimal
* Lymph Node, Mediastinal		Leukemia Mononuclear	
* Nose	Olfactory Epi Goblet Cell, Lateral Wall Lateral Wall Pars Distalis	Degeneration Hyperplasia Hyperplasia Adenoma	Hyaline, Moderate Mild Minimal
Pituitary Gland [ Adenoma TGLS = 1-8 ]			
Skin [ Inflammation TGLS = 3-6 ]	SOA, Subcut Tiss	Inflammation	Chronic, Minimal

**PRIMARY CAUSE OF DEATH**

- Kidney Nephropathy

\* PROTOCOL REQUIRED TISSUE

**Experiment Number:** 88034-07  
**Test Type:** CHRONIC  
**Route:** SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY  
**Species/Strain:** Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**  
**Test Compound:** Ozone/NNK  
**CAS Number:** OZONNNKCOMB

**Date Report Requested:** 10/21/2014  
**Time Report Requested:** 05:28:18  
**First Dose M/F:** NA / NA  
**Lab:** BNW

**ANIMAL ID:** 8818      **TRT#:** 5      **SEX:** Male      **DAY ON TEST:** 567  
**DOSE:** .1M/KNNK/OZONE      **DISP:** Moribund Sacrifice      **HISTO:** 26398

**ORGAN AND ACCOUNTABLE SITE STATUS**

**NORMAL**

\* Larynx      \* Trachea

**MISSING**

\* Lymph Node, Bronchial

**OBSERVATIONS**

Liver		Leukemia Mononuclear	
[ Leukemia Mononuclear TGLS = 7-8 ]			
* Lung	Interstitial	Fibrosis	Minimal
	Alveolar Epith	Leukemia Mononuclear	
[ Leukemia Mononuclear TGLS = 1,2-7+8 ]		Metaplasia	Minimal
* Lymph Node, Mediastinal		Leukemia Mononuclear	
[ Leukemia Mononuclear TGLS = 3-2 ]			
Lymph Node, Mesenteric		Leukemia Mononuclear	
[ Leukemia Mononuclear TGLS = 8-8 ]			
* Nose	Olfactory Epi	Degeneration	Hyaline, Mild
	Goblet Cell, Lateral Wall	Hyperplasia	Minimal
	Lateral Wall	Hyperplasia	Minimal
Preputial Gland		Inflammation	Chronic Active, Mild
[ Inflammation TGLS = 4-8 ]			
Skin	SOA, Subcut Tiss	Inflammation	Chronic, Minimal
Spleen		Leukemia Mononuclear	
[ Leukemia Mononuclear TGLS = 5,6-7 ]			
Stomach, Glandular		Inflammation	Chronic Active, Minimal
[ Inflammation TGLS = 9-9 ]			

**PRIMARY CAUSE OF DEATH**      - Spleen    Leukemia Mononuclear

\* PROTOCOL REQUIRED TISSUE



Experiment Number: 88034-07

Test Type: CHRONIC

Route: SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY

Species/Strain: Rat/F 344/N

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Test Compound: Ozone/NNK

CAS Number: OZONNNKCOMB

Date Report Requested: 10/21/2014

Time Report Requested: 05:28:18

First Dose M/F: NA / NA

Lab: BNW

ANIMAL ID: 8819

TRT#: 5

SEX: Male

DAY ON TEST: 550

DOSE: .1M/KNNK/OZONE

DISP: Moribund Sacrifice

HISTO: 26399

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

\* Larynx \* Trachea

OBSERVATIONS

Intestine Small, Ileum [ Hyperplasia TGLS = 11-12 ]	Peyers Patch	Hyperplasia	Lymphoid, Mild
Liver [ Leukemia Mononuclear TGLS = 5-7 ]		Leukemia Mononuclear	
* Lung	Interstitial	Fibrosis	Minimal
	Alveolar Epith	Leukemia Mononuclear	
Lymph Node [ Leukemia Mononuclear TGLS = 7-9 ] [ Leukemia Mononuclear TGLS = 8-11 ]	Deep Cervical	Metaplasia	Minimal
	Renal	Leukemia Mononuclear	
* Lymph Node, Bronchial [ Leukemia Mononuclear TGLS = 2-3 ]		Leukemia Mononuclear	
Lymph Node, Mandibular [ Leukemia Mononuclear TGLS = 1-7 ]		Leukemia Mononuclear	
* Lymph Node, Mediastinal		Leukemia Mononuclear	
Mesentery [ Leukemia Mononuclear TGLS = 10-10 ]		Leukemia Mononuclear	
* Nose	Olfactory Epi	Degeneration	Hyaline, Minimal
	Lateral Wall	Hyperplasia	Minimal
Peritoneum [ Inflammation TGLS = 9-11 ]		Inflammation	Chronic, Minimal
Pituitary Gland [ Adenoma TGLS = 3-7 ]	Pars Distalis	Adenoma	
Skin [ Inflammation TGLS = 6-6 ]	SOA, Subcut Tiss	Inflammation	Chronic, Minimal
Spleen		Leukemia Mononuclear	

\* PROTOCOL REQUIRED TISSUE

**Experiment Number:** 88034-07

**Test Type:** CHRONIC

**Route:** SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY

**Species/Strain:** Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

**Test Compound:** Ozone/NNK

**CAS Number:** OZONNNKCOMB

**Date Report Requested:** 10/21/2014

**Time Report Requested:** 05:28:18

**First Dose M/F:** NA / NA

**Lab:** BNW

---

**ANIMAL ID:** 8819

**TRT#:** 5

**SEX:** Male

**DAY ON TEST:** 550

**DOSE:** .1M/KNNK/OZONE

**DISP:** Moribund Sacrifice

**HISTO:** 26399

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**ORGAN AND ACCOUNTABLE SITE STATUS**

---

[ Leukemia Mononuclear TGLS = 4,13-8+9 ]

Tooth Developmental Malformation

[ Developmental Malformation TGLS = 12-4 ]

---

**PRIMARY CAUSE OF DEATH**

- Spleen Leukemia Mononuclear

---

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 88034-07

Test Type: CHRONIC

Route: SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY

Species/Strain: Rat/F 344/N

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Test Compound: Ozone/NNK

CAS Number: OZONNNKCOMB

Date Report Requested: 10/21/2014

Time Report Requested: 05:28:18

First Dose M/F: NA / NA

Lab: BNW

ANIMAL ID: 8820

TRT#: 5

SEX: Male

DAY ON TEST: 565

DOSE: .1M/KNNK/OZONE

DISP: Natural Death

HISTO: 26400

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

\* Larynx

Liver

\* Trachea

MISSING

\* Lymph Node, Bronchial

OBSERVATIONS

Liver

Note: No histologic lesion corresponding to TGL 2 (liver, all lobes, dark red) was observed. This change was probably due to post-mortem hypostatic congestion.

\* Lung

Alveolar/Bronchiolar Adenoma

Congestion

Mild

Interstitial

Fibrosis

Minimal

Alveolar Epith

Metaplasia

Minimal

[ Congestion TGLS = 1-3 ]

\* Lymph Node, Mediastinal

Hemorrhage

Mild

\* Nose

Olfactory Epi

Degeneration

Hyaline, Mild

Goblet Cell, Lateral Wall

Hyperplasia

Minimal

Lateral Wall

Hyperplasia

Minimal

Skin

SOA, Subcut Tiss

Inflammation

Chronic, Minimal

[ Inflammation TGLS = 4-6 ]

Urinary Bladder

Papilloma

Note: TGL #3 is a transitional cell papilloma.

[ Papilloma TGLS = 3-8+9+10 ]

PRIMARY CAUSE OF DEATH

- Urinary Bladder Papilloma

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 88034-07

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Date Report Requested: 10/21/2014

Test Type: CHRONIC

Test Compound: Ozone/NNK

Time Report Requested: 05:28:18

Route: SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY

CAS Number: OZONNNKCOMB

First Dose M/F: NA / NA

Species/Strain: Rat/F 344/N

Lab: BNW

ANIMAL ID: 8821

TRT#: 5

SEX: Male

DAY ON TEST: 444

DOSE: .1M/KNNK/OZONE

DISP: Moribund Sacrifice

HISTO: 26401

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

\* Larynx \* Trachea

OBSERVATIONS

Intestine Large, Cecum [ Leukemia Mononuclear TGLS = 10-8 ]		Leukemia Mononuclear	
Kidney [ Leukemia Mononuclear TGLS = 7-7 ]		Leukemia Mononuclear	
Liver [ Leukemia Mononuclear TGLS = 8-7 ]		Leukemia Mononuclear	
* Lung	Interstitial	Fibrosis	Minimal
	Alveolar Epith	Leukemia Mononuclear Metaplasia	Minimal
Lymph Node		Leukemia Mononuclear	
Note: TGL 2 involves the axillary lymph node. Since a site designator for axillary is not available, TGL 2 was recorded for lymph node without site designation.			
		[ Leukemia Mononuclear TGLS = 2-11 ]	
* Lymph Node, Bronchial [ Leukemia Mononuclear TGLS = 4-3 ]		Leukemia Mononuclear	
Lymph Node, Mandibular [ Leukemia Mononuclear TGLS = 1-12 ]		Leukemia Mononuclear	
* Lymph Node, Mediastinal [ Leukemia Mononuclear TGLS = 3-2 ]		Leukemia Mononuclear	
Lymph Node, Mesenteric [ Leukemia Mononuclear TGLS = 11-8 ]		Leukemia Mononuclear	
Mesentery [ Necrosis TGLS = 6-9 ]	Fat	Necrosis	Moderate
* Nose	Olfactory Epi	Degeneration	Hyaline, Mild
	Goblet Cell, Lateral Wall	Hyperplasia	Minimal
	Lateral Wall	Hyperplasia	Minimal
Peritoneum [ Inflammation TGLS = 13-10 ]		Inflammation	Chronic, Minimal

\* PROTOCOL REQUIRED TISSUE

**Experiment Number:** 88034-07

**Test Type:** CHRONIC

**Route:** SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY

**Species/Strain:** Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

**Test Compound:** Ozone/NNK

**CAS Number:** OZONNNKCOMB

**Date Report Requested:** 10/21/2014

**Time Report Requested:** 05:28:18

**First Dose M/F:** NA / NA

**Lab:** BNW

**ANIMAL ID:** 8821

**TRT#:** 5

**SEX:** Male

**DAY ON TEST:** 444

**DOSE:** .1M/KNNK/OZONE

**DISP:** Moribund Sacrifice

**HISTO:** 26401

**ORGAN AND ACCOUNTABLE SITE STATUS**

Skin	SOA, Subcut Tiss	Inflammation	Chronic, Minimal
[ Inflammation TGLS = 12-6 ]			
Spleen		Leukemia Mononuclear	
[ Leukemia Mononuclear TGLS = 5-7 ]			
Urinary Bladder		Hemorrhage	Moderate
	Transit Epithe	Leukemia Mononuclear	
[ Leukemia Mononuclear TGLS = 9-7 ]		Necrosis	Moderate

**PRIMARY CAUSE OF DEATH**

- Spleen Leukemia Mononuclear

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 88034-07

Test Type: CHRONIC

Route: SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY

Species/Strain: Rat/F 344/N

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Test Compound: Ozone/NNK

CAS Number: OZONNNKCOMB

Date Report Requested: 10/21/2014

Time Report Requested: 05:28:18

First Dose M/F: NA / NA

Lab: BNW

ANIMAL ID: 8822

TRT#: 5

SEX: Male

DAY ON TEST: 680

DOSE: .1M/KNK/OZONE

DISP: Moribund Sacrifice

HISTO: 26402

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

\* Larynx \* Trachea

OBSERVATIONS

* Lung	Interstitial	Fibrosis	Minimal
	Alveolar Epith	Leukemia Mononuclear	
	[ Leukemia Mononuclear TGLS = 1,9-8+3 ]	Metaplasia	Minimal
* Lymph Node, Bronchial		Leukemia Mononuclear	
* Lymph Node, Mediastinal		Leukemia Mononuclear	
* Nose	Olfactory Epi	Degeneration	Hyaline, Minimal
	Goblet Cell, Lateral Wall	Hyperplasia	Minimal
	Lateral Wall	Hyperplasia	Minimal
Peritoneum		Inflammation	Chronic, Minimal
	[ Inflammation TGLS = 5-6 ]		
Pituitary Gland	Pars Distalis	Adenoma	
	[ Adenoma TGLS = 2-10 ]		
Skin	SOA, Subcut Tiss	Inflammation	Chronic, Minimal
	SOA, Subcut Tiss	Sarcoma	Multiple
	[ Inflammation TGLS = 6-7 ]		
	[ Sarcoma TGLS = 7,8-11+12 ]		
Spleen		Fibrosis	Moderate
	[ Fibrosis TGLS = 4-9 ]	Leukemia Mononuclear	
	[ Leukemia Mononuclear TGLS = 3-9 ]		

PRIMARY CAUSE OF DEATH - Spleen Leukemia Mononuclear

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 88034-07

Test Type: CHRONIC

Route: SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY

Species/Strain: Rat/F 344/N

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Test Compound: Ozone/NNK

CAS Number: OZONNNKCOMB

Date Report Requested: 10/21/2014

Time Report Requested: 05:28:18

First Dose M/F: NA / NA

Lab: BNW

ANIMAL ID: 8823

TRT#: 5

SEX: Male

DAY ON TEST: 552

DOSE: .1M/KNNK/OZONE

DISP: Moribund Sacrifice

HISTO: 26403

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

\* Larynx

\* Lymph Node, Bronchial

\* Lymph Node, Mediastinal

\* Trachea

OBSERVATIONS

Liver

[ Leukemia Mononuclear TGLS = 4-8 ]

Leukemia Mononuclear

\* Lung

Interstitial

Fibrosis

Minimal

Alveolus

Infiltration Cellular

Histiocyte, Minimal

Alveolar Epith

Metaplasia

Minimal

\* Nose

Olfactory Epi

Degeneration

Hyaline, Mild

Goblet Cell, Lateral Wall

Hyperplasia

Minimal

Lateral Wall

Hyperplasia

Minimal

Peritoneum

Inflammation

Chronic, Minimal

[ Inflammation TGLS = 5-7 ]

Skin

Prepuce

Inflammation

Suppurative, Moderate

SOA, Subcut Tiss

Inflammation

Chronic, Minimal

[ Inflammation TGLS = 1-10 ]

[ Inflammation TGLS = 6-6 ]

Spleen

Leukemia Mononuclear

[ Leukemia Mononuclear TGLS = 3-8 ]

Testes

Interstit Cell

Adenoma

[ Adenoma TGLS = 2-9 ]

PRIMARY CAUSE OF DEATH

- Spleen Leukemia Mononuclear

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 88034-07

Test Type: CHRONIC

Route: SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY

Species/Strain: Rat/F 344/N

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Test Compound: Ozone/NNK

CAS Number: OZONNNKCOMB

Date Report Requested: 10/21/2014

Time Report Requested: 05:28:18

First Dose M/F: NA / NA

Lab: BNW

ANIMAL ID: 8824

TRT#: 5

SEX: Male

DAY ON TEST: 714

DOSE: .1M/KNNK/OZONE

DISP: Moribund Sacrifice

HISTO: 26404

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

\* Larynx \* Trachea

OBSERVATIONS

* Lung	Interstitial	Fibrosis	Minimal
	Alveolar Epith	Leukemia Mononuclear Metaplasia	Minimal
* Lymph Node, Bronchial		Leukemia Mononuclear	
Lymph Node, Mandibular		Leukemia Mononuclear	
[ Leukemia Mononuclear TGLS = 1-7 ]			
* Lymph Node, Mediastinal		Leukemia Mononuclear	
Lymph Node, Mesenteric		Leukemia Mononuclear	
[ Leukemia Mononuclear TGLS = 5-8 ]			
* Nose	Olfactory Epi	Degeneration	Hyaline, Mild
	Goblet Cell, Lateral Wall	Hyperplasia	Minimal
	Lateral Wall	Hyperplasia	Minimal
Pituitary Gland	Pars Distalis	Adenoma	
[ Adenoma TGLS = 2-7 ]			
Skin	SOA, Subcut Tiss	Inflammation	Chronic, Minimal
[ Inflammation TGLS = 4-6 ]			
Spleen		Leukemia Mononuclear	
[ Leukemia Mononuclear TGLS = 3-8 ]			

PRIMARY CAUSE OF DEATH - Spleen Leukemia Mononuclear

\* PROTOCOL REQUIRED TISSUE



**Experiment Number:** 88034-07  
**Test Type:** CHRONIC  
**Route:** SUBCUTANEOUS|RESPIRATORY  
 EXPOSURE WHOLE BODY  
**Species/Strain:** Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**  
**Test Compound:** Ozone/NNK  
**CAS Number:** OZONNNKCOMB

**Date Report Requested:** 10/21/2014  
**Time Report Requested:** 05:28:18  
**First Dose M/F:** NA / NA  
**Lab:** BNW

**ANIMAL ID:** 8825                      **TRT#:** 5                      **SEX:** Male                      **DAY ON TEST:** 663  
**DOSE:** .1M/KNNK/OZONE                      **DISP:** Moribund Sacrifice                      **HISTO:** 26405

**ORGAN AND ACCOUNTABLE SITE STATUS**

**NORMAL**

\* Larynx                                      \* Trachea

**MISSING**

\* Lymph Node, Bronchial

**OBSERVATIONS**

Liver		Hepatodiaphragmatic Nodule	
		Leukemia Mononuclear	
[ Hepatodiaphragmatic Nodule TGLS = 4-9 ]			
[ Leukemia Mononuclear TGLS = 3-9 ]			
* Lung	Interstitial	Fibrosis	Minimal
	Alveolar Epith	Metaplasia	Minimal
Note: No microscopic lesion corresponding to TGL # 2 (lung, all lobes, mottled, pale) was observed.		Gross observation probably due to incomplete blood drainage.	
* Lymph Node, Mediastinal		Leukemia Mononuclear	
* Nose	Olfactory Epi	Degeneration	Hyaline, Minimal
	Goblet Cell, Lateral Wall	Hyperplasia	Minimal
	Lateral Wall	Hyperplasia	Minimal
Peritoneum		Inflammation	Chronic, Minimal
[ Inflammation TGLS = 5-6 ]			
Skin	SOA, Subcut Tiss	Inflammation	Chronic, Minimal
[ Inflammation TGLS = 6-7 ]			
Spleen		Leukemia Mononuclear	
[ Leukemia Mononuclear TGLS = 7-8 ]			
Testes	Interstit Cell	Adenoma	
[ Adenoma TGLS = 1-8 ]			

**PRIMARY CAUSE OF DEATH**                      - Spleen    Leukemia Mononuclear

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 88034-07

Test Type: CHRONIC

Route: SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY

Species/Strain: Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

Test Compound: Ozone/NNK

CAS Number: OZONNNKCOMB

Date Report Requested: 10/21/2014

Time Report Requested: 05:28:18

First Dose M/F: NA / NA

Lab: BNW

ANIMAL ID: 8826

TRT#: 5

SEX: Male

DAY ON TEST: 481

DOSE: .1M/KNNK/OZONE

DISP: Moribund Sacrifice

HISTO: 26406

**ORGAN AND ACCOUNTABLE SITE STATUS**

**NORMAL**

\* Larynx

\* Lymph Node, Bronchial

\* Lymph Node, Mediastinal

\* Trachea

**OBSERVATIONS**

\* Lung

Interstitial

Fibrosis

Minimal

Alveolus

Infiltration Cellular

Histiocyte, Minimal

Alveolar Epith

Metaplasia

Minimal

\* Nose

Olfactory Epi

Degeneration

Hyaline, Minimal

Goblet Cell, Lateral Wall

Hyperplasia

Minimal

Lateral Wall

Hyperplasia

Minimal

Peritoneum

Inflammation

Chronic, Minimal

[ Inflammation TGLS = 2-7 ]

Skin

SOA, Subcut Tiss

Inflammation

Chronic, Minimal

[ Inflammation TGLS = 3-6 ]

Zymbal's Gland

Carcinoma

[ Carcinoma TGLS = 1-8+9 ]

PRIMARY CAUSE OF DEATH

- Zymbal's Gland Carcinoma

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 88034-07

Test Type: CHRONIC

Route: SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY

Species/Strain: Rat/F 344/N

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Test Compound: Ozone/NNK

CAS Number: OZONNNKCOMB

Date Report Requested: 10/21/2014

Time Report Requested: 05:28:18

First Dose M/F: NA / NA

Lab: BNW

ANIMAL ID: 8827

TRT#: 5

SEX: Male

DAY ON TEST: 713

DOSE: .1M/KNNK/OZONE

DISP: Moribund Sacrifice

HISTO: 26407

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

\* Larynx \* Trachea

OBSERVATIONS

Kidney		Nephropathy	Moderate
[ Nephropathy TGLS = 5-8 ]			
Liver		Leukemia Mononuclear	
[ Leukemia Mononuclear TGLS = 4-8 ]			
* Lung	Interstitial	Fibrosis	Minimal
	Alveolar Epith	Leukemia Mononuclear	
		Metaplasia	Minimal
* Lymph Node, Bronchial		Leukemia Mononuclear	
* Lymph Node, Mediastinal		Leukemia Mononuclear	
* Nose	Olfactory Epi	Degeneration	Hyaline, Mild
	Goblet Cell, Lateral Wall	Hyperplasia	Minimal
	Lateral Wall	Hyperplasia	Minimal
	Turbinate	Necrosis	Moderate
Peritoneum		Inflammation	Chronic, Minimal
[ Inflammation TGLS = 6-7 ]			
Skin	SOA, Subcut Tiss	Inflammation	Chronic, Minimal
[ Inflammation TGLS = 7-6 ]			
Spleen		Fibrosis	Mild
		Leukemia Mononuclear	
[ Fibrosis TGLS = 3-8 ]			
[ Leukemia Mononuclear TGLS = 2-8 ]			

PRIMARY CAUSE OF DEATH

- Spleen Leukemia Mononuclear

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 88034-07

Test Type: CHRONIC

Route: SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY

Species/Strain: Rat/F 344/N

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Test Compound: Ozone/NNK

CAS Number: OZONNNKCOMB

Date Report Requested: 10/21/2014

Time Report Requested: 05:28:18

First Dose M/F: NA / NA

Lab: BNW

ANIMAL ID: 8828

TRT#: 5

SEX: Male

DAY ON TEST: 736

DOSE: .1M/KNNK/OZONE

DISP: Terminal Sacrifice

HISTO: 26408

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

\* Larynx \* Trachea

MISSING

\* Lymph Node, Bronchial

OBSERVATIONS

Kidney		Nephropathy	Moderate
[ Nephropathy TGLS = 6-9 ]			
Liver		Leukemia Mononuclear	
[ Leukemia Mononuclear TGLS = 5-11 ]			
* Lung		Alveolar/Bronchiolar Adenoma	Multiple
	Interstitial	Fibrosis	Minimal
	Alveolar Epith	Leukemia Mononuclear	
[ Alveolar/Bronchiolar Adenoma TGLS = 2-3 ]		Metaplasia	Minimal
[ Leukemia Mononuclear TGLS = 1-3 ]			
* Lymph Node, Mediastinal		Leukemia Mononuclear	
[ Leukemia Mononuclear TGLS = 3-2 ]			
Mesentery	Fat	Necrosis	Mild
[ Necrosis TGLS = 9-8 ]			
* Nose	Olfactory Epi	Degeneration	Hyaline, Mild
	Goblet Cell, Lateral Wall	Hyperplasia	Mild
	Lateral Wall	Hyperplasia	Minimal
Peritoneum		Inflammation	Chronic, Minimal
[ Inflammation TGLS = 10-6 ]			
Pituitary Gland	Pars Distalis	Adenoma	
[ Adenoma TGLS = 4-10 ]			
Skin	SOA, Subcut Tiss	Inflammation	Chronic, Minimal
[ Inflammation TGLS = 11-7 ]			
Spleen		Fibrosis	Moderate
		Leukemia Mononuclear	

\* PROTOCOL REQUIRED TISSUE

**Experiment Number:** 88034-07

**Test Type:** CHRONIC

**Route:** SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY

**Species/Strain:** Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

**Test Compound:** Ozone/NNK

**CAS Number:** OZONNNKCOMB

**Date Report Requested:** 10/21/2014

**Time Report Requested:** 05:28:18

**First Dose M/F:** NA / NA

**Lab:** BNW

---

**ANIMAL ID:** 8828

**TRT#:** 5

**SEX:** Male

**DAY ON TEST:** 736

**DOSE:** .1M/KNNK/OZONE

**DISP:** Terminal Sacrifice

**HISTO:** 26408

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**ORGAN AND ACCOUNTABLE SITE STATUS**

---

[ Fibrosis TGLS = 7-10 ]

Testes

Interstit Cell

Adenoma

[ Adenoma TGLS = 8-11 ]

---

PRIMARY CAUSE OF DEATH

-

---

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 88034-07

Test Type: CHRONIC

Route: SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY

Species/Strain: Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

Test Compound: Ozone/NNK

CAS Number: OZONNNKCOMB

Date Report Requested: 10/21/2014

Time Report Requested: 05:28:18

First Dose M/F: NA / NA

Lab: BNW

ANIMAL ID: 8829

TRT#: 5

SEX: Male

DAY ON TEST: 620

DOSE: .1M/KNNK/OZONE

DISP: Moribund Sacrifice

HISTO: 26409

**ORGAN AND ACCOUNTABLE SITE STATUS**

**NORMAL**

\* Larynx

\* Lymph Node, Bronchial

\* Trachea

**MISSING**

\* Lymph Node, Mediastinal

**OBSERVATIONS**

Liver [ Inflammation TGLS = 2-8 ]		Inflammation	Mild
* Lung	Interstitial Alveolar Epith	Fibrosis Metaplasia Sarcoma	Minimal Minimal
Mesentery [ Sarcoma TGLS = 4-7 ]			
* Nose	Olfactory Epi Lateral Wall	Degeneration Hyperplasia	Hyaline, Mild Minimal
Pituitary Gland [ Adenoma TGLS = 1-8 ]	Pars Distalis	Adenoma	
Skin [ Inflammation TGLS = 5-6 ]	SOA, Subcut Tiss	Inflammation	Chronic, Minimal
Testes [ Adenoma TGLS = 3-8 ]	Interstit Cell	Adenoma	

PRIMARY CAUSE OF DEATH

-

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 88034-07

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Date Report Requested: 10/21/2014

Test Type: CHRONIC

Test Compound: Ozone/NNK

Time Report Requested: 05:28:18

Route: SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY

CAS Number: OZONNNKCOMB

First Dose M/F: NA / NA

Species/Strain: Rat/F 344/N

Lab: BNW

ANIMAL ID: 8830

TRT#: 5

SEX: Male

DAY ON TEST: 733

DOSE: .1M/KNNK/OZONE

DISP: Moribund Sacrifice

HISTO: 26410

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

\* Lymph Node, Bronchial

\* Lymph Node, Mediastinal

\* Trachea

OBSERVATIONS

Kidney		Nephropathy	Moderate
[ Nephropathy TGLS = 7-6 ]			
* Larynx		Inflammation	Suppurative, Mild
* Lung		Congestion	Mild
	Interstitialium	Fibrosis	Minimal
	Alveolar Epith	Metaplasia	Minimal
Note: TGL #5 (lung, bilateral, mottled) was due to subpeural hemorrhage probably induced by anesthesia with carbon dioxide prior to euthanasia.			
[ Congestion TGLS = 5-3 ]			
* Nose	Olfactory Epi	Degeneration	Hyaline, Moderate
	Goblet Cell, Lateral Wall	Hyperplasia	Minimal
	Lateral Wall	Hyperplasia	Minimal
Pituitary Gland	Pars Distalis	Adenoma	
[ Adenoma TGLS = 6-6 ]			
Prostate		Inflammation	Suppurative, Mild
[ Inflammation TGLS = 9-8 ]			
Skin	Sebaceous GI	Hyperplasia	Mild
	SOA, Subcut Tiss	Sarcoma	
[ Hyperplasia TGLS = 3-6 ]			
[ Sarcoma TGLS = 4-7 ]			
Testes	Interstit Cell	Adenoma	
[ Adenoma TGLS = 10-8 ]			
Urinary Bladder		Hemorrhage	Mild
[ Hemorrhage TGLS = 8-8 ]			

PRIMARY CAUSE OF DEATH

- Pituitary Gland Pars Distalis Adenoma

\* PROTOCOL REQUIRED TISSUE







Experiment Number: 88034-07

Test Type: CHRONIC

Route: SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY

Species/Strain: Rat/F 344/N

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Test Compound: Ozone/NNK

CAS Number: OZONNNKCOMB

Date Report Requested: 10/21/2014

Time Report Requested: 05:28:18

First Dose M/F: NA / NA

Lab: BNW

ANIMAL ID: 8833

TRT#: 5

SEX: Male

DAY ON TEST: 575

DOSE: .1M/KNNK/OZONE

DISP: Moribund Sacrifice

HISTO: 26413

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

\* Larynx

\* Lymph Node, Mediastinal

\* Trachea

MISSING

\* Lymph Node, Bronchial

OBSERVATIONS

\* Lung

Interstitial  
Alveolar Epith

Congestion  
Fibrosis  
Metaplasia

Mild  
Minimal  
Minimal

[ Congestion TGLS = 2-3 ]

\* Nose

Olfactory Epi  
Goblet Cell, Lateral Wall  
Lateral Wall  
SOA, Subcut Tiss

Degeneration  
Hyperplasia  
Hyperplasia  
Inflammation

Hyaline, Mild  
Minimal  
Minimal  
Chronic, Minimal

Skin

[ Inflammation TGLS = 5-6 ]

Spleen

[ Fibrosis TGLS = 4-8 ]

Fibrosis

Mild

Testes

[ Atrophy TGLS = 1-8 ]

Atrophy

Moderate

Zymbal's Gland

[ Carcinoma TGLS = 3-7 ]

Carcinoma

PRIMARY CAUSE OF DEATH

- Zymbal's Gland Carcinoma

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 88034-07

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Date Report Requested: 10/21/2014

Test Type: CHRONIC

Test Compound: Ozone/NNK

Time Report Requested: 05:28:18

Route: SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY

CAS Number: OZONNNKCOMB

First Dose M/F: NA / NA

Species/Strain: Rat/F 344/N

Lab: BNW

ANIMAL ID: 8834

TRT#: 5

SEX: Male

DAY ON TEST: 496

DOSE: .1M/KNNK/OZONE

DISP: Moribund Sacrifice

HISTO: 26414

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

\* Larynx

\* Lymph Node, Mediastinal

\* Trachea

MISSING

\* Lymph Node, Bronchial

OBSERVATIONS

Kidney		Pigmentation	Hemosiderin, Marked
[ Pigmentation TGLS = 7-7 ]			
Liver		Degeneration	Cystic, Mild
[ Leukemia Mononuclear TGLS = 6-9 ]		Leukemia Mononuclear	
* Lung	Interstitial	Fibrosis	Minimal
	Alveolus	Infiltration Cellular	Histiocyte, Minimal
		Leukemia Mononuclear	
	Alveolar Epith	Metaplasia	Minimal
[ Leukemia Mononuclear TGLS = 3-3 ]			
* Lym Node Media			
Note: No histological lesion corresponding to dark mediastinal lymph node (TGL 2) was observed. Therefore, NCL was entered on IANR form.			
* Nose	Olfactory Epi	Degeneration	Hyaline, Mild
	Goblet Cell, Lateral Wall	Hyperplasia	Mild
	Lateral Wall	Hyperplasia	Minimal
Skin	SOA, Subcut Tiss	Inflammation	Chronic, Minimal
[ Inflammation TGLS = 8-6 ]			
Spleen		Accessory Spleen	
		Leukemia Mononuclear	
[ Accessory Spleen TGLS = 5-8 ]			
[ Leukemia Mononuclear TGLS = 4-8 ]			

PRIMARY CAUSE OF DEATH

- Spleen Leukemia Mononuclear

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 88034-07

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Date Report Requested: 10/21/2014

Test Type: CHRONIC

Test Compound: Ozone/NNK

Time Report Requested: 05:28:18

Route: SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY

CAS Number: OZONNNKCOMB

First Dose M/F: NA / NA

Species/Strain: Rat/F 344/N

Lab: BNW

ANIMAL ID: 8835

TRT#: 5

SEX: Male

DAY ON TEST: 736

DOSE: .1M/KNNK/OZONE

DISP: Terminal Sacrifice

HISTO: 26415

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

\* Larynx

\* Lymph Node, Mediastinal

\* Trachea

MISSING

\* Lymph Node, Bronchial

OBSERVATIONS

Kidney		Nephropathy	Moderate
[ Nephropathy TGLS = 4-11 ]			
Liver		Degeneration Leukemia Mononuclear	Cystic, Mild
[ Leukemia Mononuclear TGLS = 3-10 ]			
* Lung	Interstitial Alveolar Epith Alveolar Epith	Fibrosis Hyperplasia Metaplasia	Minimal Atypical, Mild Minimal
[ Hyperplasia TGLS = 7,8-8+9 ]			
* Nose	Olfactory Epi Goblet Cell, Lateral Wall Lateral Wall	Degeneration Hyperplasia Hyperplasia	Hyaline, Mild Minimal Minimal
Peritoneum		Inflammation	Chronic, Minimal
[ Inflammation TGLS = 5-6 ]			
Pituitary Gland	Pars Distalis	Adenoma	
[ Adenoma TGLS = 1-10 ]			
Skin	SOA, Subcut Tiss	Inflammation	Chronic, Minimal
[ Inflammation TGLS = 6-7 ]			
Spleen		Leukemia Mononuclear	
[ Leukemia Mononuclear TGLS = 2-10 ]			
Testes	Interstit Cell	Adenoma	
[ Adenoma TGLS = 9-10 ]			

PRIMARY CAUSE OF DEATH

-

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 88034-07

Test Type: CHRONIC

Route: SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY

Species/Strain: Rat/F 344/N

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Test Compound: Ozone/NNK

CAS Number: OZONNNKCOMB

Date Report Requested: 10/21/2014

Time Report Requested: 05:28:18

First Dose M/F: NA / NA

Lab: BNW

ANIMAL ID: 8836

TRT#: 5

SEX: Male

DAY ON TEST: 444

DOSE: .1M/KNK/OZONE

DISP: Moribund Sacrifice

HISTO: 26416

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

\* Larynx \* Trachea

OBSERVATIONS

Heart	Pericardium	Fibrosis	Moderate
Note: No histologic lesion was observed in the heart which correlated with the dilatation observed grossly (TGL 3).			
Note: Primary cause of death was probably the distension of the pericardium and cardiac taponade. The only histologic correlate was pericardial fibrosis.			
[ Fibrosis TGLS = 2-7 ]			
Kidney		Nephropathy	Moderate
[ Nephropathy TGLS = 6-8 ]			
* Lung		Congestion	Minimal
	Interstitial	Fibrosis	Minimal
	Alveolar Epith	Metaplasia	Minimal
[ Congestion TGLS = 4-3 ]			
Lymph Node	Renal	Hemorrhage	Mild
[ Hemorrhage TGLS = 8-8 ]			
* Lymph Node, Bronchial		Hemorrhage	Mild
* Lymph Node, Mediastinal		Hemorrhage	Moderate
[ Hemorrhage TGLS = 5-2 ]			
* Nose	Olfactory Epi	Degeneration	Hyaline, Mild
	Goblet Cell, Lateral Wall	Hyperplasia	Minimal
	Lateral Wall	Hyperplasia	Minimal
Peritoneum		Inflammation	Chronic, Minimal
[ Inflammation TGLS = 7-9 ]			
Skin	SOA, Subcut Tiss	Inflammation	Chronic, Minimal
[ Inflammation TGLS = 9-6 ]			

PRIMARY CAUSE OF DEATH - Heart Pericardium Fibrosis

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 88034-07

Test Type: CHRONIC

Route: SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY

Species/Strain: Rat/F 344/N

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Test Compound: Ozone/NNK

CAS Number: OZONNNKCOMB

Date Report Requested: 10/21/2014

Time Report Requested: 05:28:18

First Dose M/F: NA / NA

Lab: BNW

ANIMAL ID: 8837

TRT#: 5

SEX: Male

DAY ON TEST: 567

DOSE: .1M/KNNK/OZONE

DISP: Natural Death

HISTO: 26417

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

\* Larynx

\* Lymph Node, Bronchial

\* Trachea

OBSERVATIONS

Liver		Leukemia Mononuclear	
[ Leukemia Mononuclear TGLS = 4-8 ]			
* Lung		Edema	Minimal
	Interstitial	Fibrosis	Minimal
	Alveolus	Infiltration Cellular	Histiocyte, Minimal
	Alveolar Epith	Metaplasia	Minimal
[ Edema TGLS = 3-3 ]			
Lymph Node, Mandibular		Infiltration Cellular	Plasma Cell, Mild
[ Infiltration Cellular TGLS = 1-10 ]			
* Lymph Node, Mediastinal		Leukemia Mononuclear	
[ Leukemia Mononuclear TGLS = 2-2 ]			
Mesentery		Sarcoma	
[ Sarcoma TGLS = 6-7 ]			
* Nose	Olfactory Epi	Degeneration	Hyaline, Minimal
	Goblet Cell, Lateral Wall	Hyperplasia	Minimal
	Lateral Wall	Hyperplasia	Minimal
Skin	SOA, Subcut Tiss	Inflammation	Chronic, Minimal
		Keratoacanthoma	
[ Inflammation TGLS = 8-6 ]			
[ Keratoacanthoma TGLS = 9-9 ]			
Spleen		Leukemia Mononuclear	
[ Leukemia Mononuclear TGLS = 5-7 ]			
Testes	Interstit Cell	Adenoma	
[ Adenoma TGLS = 7-8 ]			

PRIMARY CAUSE OF DEATH - Spleen Leukemia Mononuclear

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 88034-07

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Date Report Requested: 10/21/2014

Test Type: CHRONIC

Test Compound: Ozone/NNK

Time Report Requested: 05:28:18

Route: SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY

CAS Number: OZONNNKCOMB

First Dose M/F: NA / NA

Species/Strain: Rat/F 344/N

Lab: BNW

ANIMAL ID: 8838

TRT#: 5

SEX: Male

DAY ON TEST: 641

DOSE: .1M/KNNK/OZONE

DISP: Moribund Sacrifice

HISTO: 26418

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

\* Larynx

\* Lymph Node, Bronchial

\* Trachea

OBSERVATIONS

Kidney		Nephropathy	Moderate
[ Nephropathy TGLS = 5-10 ]			
Liver		Degeneration	Cystic, Mild
[ Leukemia Mononuclear TGLS = 6-9 ]		Leukemia Mononuclear	
* Lung		Edema	Minimal
	Interstitial	Fibrosis	Minimal
	Alveolar Epith	Metaplasia	Minimal
[ Metaplasia TGLS = 10-3 ]			
* Lymph Node, Mediastinal		Leukemia Mononuclear	
* Nose	Olfactory Epi	Degeneration	Hyaline, Moderate
	Goblet Cell, Lateral Wall	Hyperplasia	Minimal
	Lateral Wall	Hyperplasia	Minimal
Peritoneum		Inflammation	Chronic, Minimal
[ Inflammation TGLS = 8-6 ]			
Pituitary Gland	Pars Distalis	Adenoma	
[ Adenoma TGLS = 1-8 ]			
Skin	Prepuce	Inflammation	Suppurative, Mild
	SOA, Subcut Tiss	Inflammation	Chronic, Minimal
[ Inflammation TGLS = 9-7 ]			
[ Inflammation TGLS = 7-9 ]			
Spleen		Leukemia Mononuclear	
[ Leukemia Mononuclear TGLS = 4-9 ]			
Testes	Interstit Cell	Adenoma	
		Atrophy	Marked
[ Adenoma TGLS = 3-8 ]			
[ Atrophy TGLS = 2-8 ]			

\* PROTOCOL REQUIRED TISSUE

**Experiment Number:** 88034-07

**Test Type:** CHRONIC

**Route:** SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY

**Species/Strain:** Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

**Test Compound:** Ozone/NNK

**CAS Number:** OZONNNKCOMB

**Date Report Requested:** 10/21/2014

**Time Report Requested:** 05:28:18

**First Dose M/F:** NA / NA

**Lab:** BNW

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**ANIMAL ID:** 8838

**TRT#:** 5

**SEX:** Male

**DAY ON TEST:** 641

**DOSE:** .1M/KNNK/OZONE

**DISP:** Moribund Sacrifice

**HISTO:** 26418

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**ORGAN AND ACCOUNTABLE SITE STATUS**

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PRIMARY CAUSE OF DEATH

- Spleen Leukemia Mononuclear

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\* PROTOCOL REQUIRED TISSUE



Experiment Number: 88034-07

Test Type: CHRONIC

Route: SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY

Species/Strain: Rat/F 344/N

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Test Compound: Ozone/NNK

CAS Number: OZONNNKCOMB

Date Report Requested: 10/21/2014

Time Report Requested: 05:28:18

First Dose M/F: NA / NA

Lab: BNW

ANIMAL ID: 8839

TRT#: 5

SEX: Male

DAY ON TEST: 638

DOSE: .1M/KNK/OZONE

DISP: Moribund Sacrifice

HISTO: 26419

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

\* Larynx

\* Trachea

INSUFFICIENT TISSUE

\* Lymph Node, Bronchial

OBSERVATIONS

Liver		Degeneration Leukemia Mononuclear	Cystic, Mild
[ Leukemia Mononuclear TGLS = 2-10 ]			
* Lung	Interstitium	Fibrosis Leukemia Mononuclear	Minimal
	Alveolar Epith	Metaplasia Leukemia Mononuclear	Minimal
* Lymph Node, Mediastinal			
[ Leukemia Mononuclear TGLS = 1-2 ]			
Mesentery	Fat	Necrosis	Mild
[ Necrosis TGLS = 6-7 ]			
* Nose	Olfactory Epi Goblet Cell, Lateral Wall Lateral Wall	Degeneration Hyperplasia Hyperplasia Leukemia Mononuclear	Hyaline, Mild Minimal Minimal
Pituitary Gland			
[ Leukemia Mononuclear TGLS = 7-8 ]			
Skin	SOA, Subcut Tiss	Inflammation	Chronic, Minimal
[ Inflammation TGLS = 5-6 ]			
Spleen		Leukemia Mononuclear	
[ Leukemia Mononuclear TGLS = 3-9 ]			
Testes	Interstit Cell	Adenoma	
[ Adenoma TGLS = 4-8 ]			

PRIMARY CAUSE OF DEATH

- Spleen Leukemia Mononuclear

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 88034-07

Test Type: CHRONIC

Route: SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY

Species/Strain: Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

Test Compound: Ozone/NNK

CAS Number: OZONNNKCOMB

Date Report Requested: 10/21/2014

Time Report Requested: 05:28:18

First Dose M/F: NA / NA

Lab: BNW

ANIMAL ID: 8840

TRT#: 5

SEX: Male

DAY ON TEST: 604

DOSE: .1M/KNNK/OZONE

DISP: Moribund Sacrifice

HISTO: 26420

**ORGAN AND ACCOUNTABLE SITE STATUS**

**NORMAL**

\* Larynx

\* Lymph Node, Bronchial

\* Lymph Node, Mediastinal

**INSUFFICIENT TISSUE**

\* Trachea

**OBSERVATIONS**

Kidney		Nephropathy	Marked
[ Nephropathy TGLS = 5-9 ]			
Liver		Degeneration Hepatodiaphragmatic Nodule Leukemia Mononuclear	Cystic, Minimal
[ Degeneration TGLS = 4-8 ]			
[ Hepatodiaphragmatic Nodule TGLS = 3-8 ]			
* Lung	Interstitium	Fibrosis	Minimal
	Alveolus	Infiltration Cellular	Histiocyte, Minimal
	Alveolar Epith	Metaplasia	Minimal
* Nose	Olfactory Epi	Degeneration	Hyaline, Mild
	Goblet Cell, Lateral Wall	Hyperplasia	Minimal
	Lateral Wall	Hyperplasia	Minimal
Peritoneum		Inflammation	Chronic, Minimal
[ Inflammation TGLS = 6-6 ]			
Pituitary Gland	Pars Distalis	Adenoma	
[ Adenoma TGLS = 1-8 ]			
Skin	SOA, Subcut Tiss	Inflammation	Chronic, Minimal
[ Inflammation TGLS = 7-7 ]			
Spleen		Fibrosis Leukemia Mononuclear	Moderate
[ Fibrosis TGLS = 2-8 ]			

PRIMARY CAUSE OF DEATH

- Kidney Nephropathy

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 88034-07

Test Type: CHRONIC

Route: SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY

Species/Strain: Rat/F 344/N

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Test Compound: Ozone/NNK

CAS Number: OZONNNKCOMB

Date Report Requested: 10/21/2014

Time Report Requested: 05:28:18

First Dose M/F: NA / NA

Lab: BNW

ANIMAL ID: 8841

TRT#: 5

SEX: Male

DAY ON TEST: 703

DOSE: .1M/KNK/OZONE

DISP: Natural Death

HISTO: 26421

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

* Larynx	* Lymph Node, Bronchial	* Lymph Node, Mediastinal	* Trachea
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OBSERVATIONS

Liver		Leukemia Mononuclear	
[ Leukemia Mononuclear TGLS = 1-8 ]			
* Lung	Alveolar Epith	Metaplasia	Minimal
* Nose	Olfactory Epi	Degeneration	Hyaline, Minimal
	Goblet Cell, Lateral Wall	Hyperplasia	Minimal
	Lateral Wall	Hyperplasia	Minimal
Peritoneum		Inflammation	Chronic, Minimal
[ Inflammation TGLS = 5-7 ]			
Skin	SOA, Subcut Tiss	Inflammation	Chronic, Minimal
[ Inflammation TGLS = 6-6 ]			
Spleen		Leukemia Mononuclear	
[ Leukemia Mononuclear TGLS = 2-8 ]			
Testes	Interstit Cell	Adenoma	
		Atrophy	Marked
[ Adenoma TGLS = 4-9 ]			
[ Atrophy TGLS = 3-9 ]			

PRIMARY CAUSE OF DEATH	- Spleen Leukemia Mononuclear
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\* PROTOCOL REQUIRED TISSUE

Experiment Number: 88034-07

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Date Report Requested: 10/21/2014

Test Type: CHRONIC

Test Compound: Ozone/NNK

Time Report Requested: 05:28:18

Route: SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY

CAS Number: OZONNNKCOMB

First Dose M/F: NA / NA

Species/Strain: Rat/F 344/N

Lab: BNW

ANIMAL ID: 8842

TRT#: 5

SEX: Male

DAY ON TEST: 683

DOSE: .1M/KNNK/OZONE

DISP: Moribund Sacrifice

HISTO: 26422

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

\* Larynx

\* Lymph Node, Bronchial

\* Trachea

MISSING

\* Lymph Node, Mediastinal

OBSERVATIONS

Kidney		Nephropathy	Marked
[ Nephropathy TGLS = 6-9 ]			
Liver		Leukemia Mononuclear Vacuolization Cytoplasmic	Moderate
[ Leukemia Mononuclear TGLS = 5-10 ]			
* Lung	Interstitial Alveolar Epith	Congestion Fibrosis Metaplasia	Mild Minimal Minimal
[ Congestion TGLS = 12-3 ]			
Mesentery	Fat	Necrosis	Mild
[ Necrosis TGLS = 4-10 ]			
* Nose	Olfactory Epi Goblet Cell, Lateral Wall Lateral Wall	Degeneration Hyperplasia Hyperplasia Inflammation	Hyaline, Minimal Minimal Minimal Suppurative, Moderate
	Olfactory Epi	Metaplasia Inflammation	Moderate Chronic, Minimal
Peritoneum			
[ Inflammation TGLS = 9-6 ]			
Pituitary Gland	Pars Distalis	Adenoma	
[ Adenoma TGLS = 3-8 ]			
Skin	SOA, Subcut Tiss SOA, Subcut Tiss	Inflammation Sarcoma	Chronic, Minimal
[ Inflammation TGLS = 10-7 ]			
[ Sarcoma TGLS = 11-11 ]			
Spleen		Fibrosis	Moderate

\* PROTOCOL REQUIRED TISSUE

**Experiment Number:** 88034-07

**Test Type:** CHRONIC

**Route:** SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY

**Species/Strain:** Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

**Test Compound:** Ozone/NNK

**CAS Number:** OZONNNKCOMB

**Date Report Requested:** 10/21/2014

**Time Report Requested:** 05:28:18

**First Dose M/F:** NA / NA

**Lab:** BNW

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**ANIMAL ID:** 8842

**TRT#:** 5

**SEX:** Male

**DAY ON TEST:** 683

**DOSE:** .1M/KNNK/OZONE

**DISP:** Moribund Sacrifice

**HISTO:** 26422

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**ORGAN AND ACCOUNTABLE SITE STATUS**

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[ Fibrosis TGLS = 7,8-8 ]

Leukemia Mononuclear

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**PRIMARY CAUSE OF DEATH**

- Spleen Leukemia Mononuclear

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\* PROTOCOL REQUIRED TISSUE

Experiment Number: 88034-07

Test Type: CHRONIC

Route: SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY

Species/Strain: Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

Test Compound: Ozone/NNK

CAS Number: OZONNNKCOMB

Date Report Requested: 10/21/2014

Time Report Requested: 05:28:18

First Dose M/F: NA / NA

Lab: BNW

ANIMAL ID: 8843

TRT#: 5

SEX: Male

DAY ON TEST: 736

DOSE: .1M/KNNK/OZONE

DISP: Terminal Sacrifice

HISTO: 26423

**ORGAN AND ACCOUNTABLE SITE STATUS**

**NORMAL**

\* Larynx \* Trachea

**MISSING**

\* Lymph Node, Bronchial

**OBSERVATIONS**

Liver		Degeneration Hepatodiaphragmatic Nodule Leukemia Mononuclear	Cystic, Mild
[ Degeneration TGLS = 8-12 ] [ Hepatodiaphragmatic Nodule TGLS = 6,7-11 ]			
* Lung	Interstitial Alveolar Epith	Fibrosis Hyperplasia Leukemia Mononuclear	Minimal Atypical, Minimal
Lymph Node	Alveolar Epith Pancreatic	Metaplasia Hyperplasia	Minimal Lymphoid, Moderate
[ Hyperplasia TGLS = 3-8 ]			
* Lymph Node, Mediastinal		Leukemia Mononuclear	
[ Leukemia Mononuclear TGLS = 1-2 ]			
Lymph Node, Mesenteric		Leukemia Mononuclear	
[ Leukemia Mononuclear TGLS = 11-9 ]			
* Nose	Olfactory Epi Goblet Cell, Lateral Wall Lateral Wall	Degeneration Hyperplasia Hyperplasia	Hyaline, Mild Minimal Minimal
Peritoneum		Inflammation	Chronic, Minimal
[ Inflammation TGLS = 9-6 ]			
Skin	SOA, Subcut Tiss	Inflammation	Chronic, Minimal
[ Inflammation TGLS = 10-7 ]			
Spleen		Leukemia Mononuclear	
[ Leukemia Mononuclear TGLS = 4,5-10 ]			
Testes	Interstit Cell	Adenoma	

\* PROTOCOL REQUIRED TISSUE

**Experiment Number:** 88034-07

**Test Type:** CHRONIC

**Route:** SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY

**Species/Strain:** Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

**Test Compound:** Ozone/NNK

**CAS Number:** OZONNNKCOMB

**Date Report Requested:** 10/21/2014

**Time Report Requested:** 05:28:18

**First Dose M/F:** NA / NA

**Lab:** BNW

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**ANIMAL ID:** 8843

**TRT#:** 5

**SEX:** Male

**DAY ON TEST:** 736

**DOSE:** .1M/KNNK/OZONE

**DISP:** Terminal Sacrifice

**HISTO:** 26423

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**ORGAN AND ACCOUNTABLE SITE STATUS**

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[ Adenoma TGLS = 2-10 ]

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PRIMARY CAUSE OF DEATH

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\* PROTOCOL REQUIRED TISSUE

Experiment Number: 88034-07

Test Type: CHRONIC

Route: SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY

Species/Strain: Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

Test Compound: Ozone/NNK

CAS Number: OZONNNKCOMB

Date Report Requested: 10/21/2014

Time Report Requested: 05:28:18

First Dose M/F: NA / NA

Lab: BNW

ANIMAL ID: 8844

TRT#: 5

SEX: Male

DAY ON TEST: 736

DOSE: .1M/KNNK/OZONE

DISP: Terminal Sacrifice

HISTO: 26424

**ORGAN AND ACCOUNTABLE SITE STATUS**

**NORMAL**

\* Larynx

\* Lymph Node, Mediastinal

\* Trachea

**MISSING**

\* Lymph Node, Bronchial

**OBSERVATIONS**

* Lung	Interstitial Alveolar Epith Alveolar Epith	Fibrosis Hyperplasia Metaplasia	Minimal Atypical, Mild Minimal
* Nose	Olfactory Epi Goblet Cell, Lateral Wall Lateral Wall	Degeneration Hyperplasia Hyperplasia	Hyaline, Minimal Minimal Minimal
Peritoneum [ Inflammation TGLS = 4-7 ]		Inflammation	Chronic, Marked
Pituitary Gland [ Adenoma TGLS = 1-6 ]	Pars Distalis	Adenoma	
Skin [ Inflammation TGLS = 5-8 ]	SOA, Subcut Tiss	Inflammation	Chronic, Minimal
Spleen [ Leukemia Mononuclear TGLS = 3-6 ]		Leukemia Mononuclear	
Testes [ Adenoma TGLS = 2-6 ]	Interstit Cell	Adenoma	

PRIMARY CAUSE OF DEATH

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\* PROTOCOL REQUIRED TISSUE



Experiment Number: 88034-07

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Date Report Requested: 10/21/2014

Test Type: CHRONIC

Test Compound: Ozone/NNK

Time Report Requested: 05:28:18

Route: SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY

CAS Number: OZONNNKCOMB

First Dose M/F: NA / NA

Species/Strain: Rat/F 344/N

Lab: BNW

ANIMAL ID: 8845

TRT#: 5

SEX: Male

DAY ON TEST: 632

DOSE: .1M/KNNK/OZONE

DISP: Moribund Sacrifice

HISTO: 26425

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

Preputial Gland

\* Trachea

MISSING

\* Lymph Node, Bronchial

\* Lymph Node, Mediastinal

OBSERVATIONS

Kidney		Nephropathy	Marked
[ Nephropathy TGLS = 6-9 ]			
* Larynx		Inflammation	Suppurative, Mild
Liver		Angiectasis	Mild
		Vacuolization Cytoplasmic	Marked
[ Angiectasis TGLS = 4-10 ]			
[ Vacuolization Cytoplasmic TGLS = 5-10 ]			
* Lung	Interstitium	Fibrosis	Minimal
	Alveolar Epith	Metaplasia	Minimal
Note: No histologic lesion corresponding to TGL # 1 (lung, all lobes, pale) was observed. Therefore NCL was entered in block B-1 on the IANR form.			
* Nose	Olfactory Epi	Degeneration	Hyaline, Mild
	Lateral Wall	Hyperplasia	Minimal
Peritoneum		Inflammation	Chronic, Minimal
[ Inflammation TGLS = 7-6 ]			
Pituitary Gland	Pars Distalis	Adenoma	
[ Adenoma TGLS = 2-10 ]			
Preputial GI			
Note: No microscopic lesion corresponding to TGL #3 (preputial gland, right, enlarged, 1 cm dia,) was observed other than distention of the duct. NCL entered on IANR.			
Skin	SOA, Subcut Tiss	Inflammation	Chronic, Minimal
[ Inflammation TGLS = 8-7 ]			

PRIMARY CAUSE OF DEATH

- Kidney Nephropathy

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 88034-07

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Date Report Requested: 10/21/2014

Test Type: CHRONIC

Test Compound: Ozone/NNK

Time Report Requested: 05:28:18

Route: SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY

CAS Number: OZONNNKCOMB

First Dose M/F: NA / NA

Species/Strain: Rat/F 344/N

Lab: BNW

ANIMAL ID: 8846

TRT#: 5

SEX: Male

DAY ON TEST: 725

DOSE: .1M/KNNK/OZONE

DISP: Moribund Sacrifice

HISTO: 26426

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

* Larynx	* Lymph Node, Bronchial	* Lymph Node, Mediastinal	* Trachea
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OBSERVATIONS

Kidney [ Nephropathy TGLS = 6-10 ]		Nephropathy	Moderate
Liver [ Leukemia Mononuclear TGLS = 5-10 ]		Leukemia Mononuclear	
* Lung	Interstitial	Fibrosis	Minimal
	Alveolar Epith	Metaplasia	Minimal
Mesentery [ Necrosis TGLS = 10-8 ]	Fat	Necrosis	Mild
* Nose	Olfactory Epi	Degeneration	Hyaline, Moderate
	Goblet Cell, Lateral Wall	Hyperplasia	Minimal
	Lateral Wall	Hyperplasia	Minimal
Peritoneum [ Inflammation TGLS = 7-7 ]		Inflammation	Chronic, Minimal
Pituitary Gland [ Adenoma TGLS = 1-8 ]	Pars Distalis	Adenoma	
Skin		Hyperplasia	Moderate
	SOA, Subcut Tiss	Inflammation	Chronic, Minimal
	SOA, Subcut Tiss	Sarcoma	
Spleen [ Fibrosis TGLS = 4-10 ]		Fibrosis Leukemia Mononuclear	Moderate
Testes [ Adenoma TGLS = 2-8 ]	Interstit Cell	Adenoma	

PRIMARY CAUSE OF DEATH

- Pituitary Gland Pars Distalis Adenoma

\* PROTOCOL REQUIRED TISSUE

**Experiment Number:** 88034-07

**Test Type:** CHRONIC

**Route:** SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY

**Species/Strain:** Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

**Test Compound:** Ozone/NNK

**CAS Number:** OZONNNKCOMB

**Date Report Requested:** 10/21/2014

**Time Report Requested:** 05:28:18

**First Dose M/F:** NA / NA

**Lab:** BNW

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**ANIMAL ID:** 8846

**TRT#:** 5

**SEX:** Male

**DAY ON TEST:** 725

**DOSE:** .1M/KNNK/OZONE

**DISP:** Moribund Sacrifice

**HISTO:** 26426

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**ORGAN AND ACCOUNTABLE SITE STATUS**

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CONTRIBUTORY CAUSE OF DEATH

- Skin SOA Subcut Tiss Sarcoma

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\* PROTOCOL REQUIRED TISSUE

**Experiment Number:** 88034-07

**Test Type:** CHRONIC

**Route:** SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY

**Species/Strain:** Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

**Test Compound:** Ozone/NNK

**CAS Number:** OZONNNKCOMB

**Date Report Requested:** 10/21/2014

**Time Report Requested:** 05:28:18

**First Dose M/F:** NA / NA

**Lab:** BNW

**ANIMAL ID:** 8847

**TRT#:** 5

**SEX:** Male

**DAY ON TEST:** 416

**DOSE:** .1M/KNNK/OZONE

**DISP:** Moribund Sacrifice

**HISTO:** 26427

**ORGAN AND ACCOUNTABLE SITE STATUS**

**NORMAL**

\* Larynx

\* Trachea

**MISSING**

\* Lymph Node, Bronchial

\* Lymph Node, Mediastinal

**OBSERVATIONS**

\* Lung

Interstitial

Fibrosis

Minimal

Alveolus

Infiltration Cellular

Histiocyte, Minimal

Alveolar Epith

Metaplasia

Minimal

\* Nose

Olfactory Epi

Degeneration

Hyaline, Mild

Goblet Cell, Lateral Wall

Hyperplasia

Minimal

Lateral Wall

Hyperplasia

Minimal

Peritoneum

Inflammation

Chronic, Minimal

[ Inflammation TGLS = 3-8 ]

Pituitary Gland

Pars Distalis

Adenoma

[ Adenoma TGLS = 2-7 ]

Skin

SOA, Subcut Tiss

Inflammation

Chronic, Minimal

[ Inflammation TGLS = 4-6 ]

[ Keratoacanthoma TGLS = 1-7 ]

Keratoacanthoma

**PRIMARY CAUSE OF DEATH**

- Pituitary Gland Pars Distalis Adenoma

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 88034-07

Test Type: CHRONIC

Route: SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY

Species/Strain: Rat/F 344/N

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Test Compound: Ozone/NNK

CAS Number: OZONNNKCOMB

Date Report Requested: 10/21/2014

Time Report Requested: 05:28:18

First Dose M/F: NA / NA

Lab: BNW

ANIMAL ID: 8848

TRT#: 5

SEX: Male

DAY ON TEST: 683

DOSE: .1M/KNNK/OZONE

DISP: Moribund Sacrifice

HISTO: 26428

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

\* Larynx

\* Lymph Node, Mediastinal

\* Trachea

MISSING

\* Lymph Node, Bronchial

OBSERVATIONS

Kidney [ Nephropathy TGLS = 2-11 ]		Nephropathy	Marked
Liver [ Angiectasis TGLS = 4-10 ]		Angiectasis Leukemia Mononuclear	Mild
* Lung [ Hyperplasia TGLS = 8-8+9 ]	Interstitial Alveolar Epith Alveolar Epith	Fibrosis Hyperplasia Metaplasia	Minimal Atypical, Mild Minimal
* Nose	Olfactory Epi Goblet Cell, Lateral Wall Lateral Wall	Degeneration Hyperplasia Hyperplasia Inflammation	Hyaline, Mild Minimal Minimal Chronic, Minimal
Peritoneum [ Inflammation TGLS = 6-6 ]			
Pituitary Gland [ Adenoma TGLS = 3-10 ]	Pars Distalis	Adenoma	
Skin [ Inflammation TGLS = 7-7 ]	SOA, Subcut Tiss	Inflammation	Chronic, Minimal
Spleen [ Fibrosis TGLS = 5-10 ]		Fibrosis Leukemia Mononuclear	Moderate
Zymbal's Gland [ Carcinoma TGLS = 1-12 ]		Carcinoma	

PRIMARY CAUSE OF DEATH

- Kidney Nephropathy

CONTRIBUTORY CAUSE OF DEATH

- Pituitary Gland Pars Distalis Adenoma;Zymbal's Gland Carcinoma

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 88034-07

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Date Report Requested: 10/21/2014

Test Type: CHRONIC

Test Compound: Ozone/NNK

Time Report Requested: 05:28:18

Route: SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY

CAS Number: OZONNNKCOMB

First Dose M/F: NA / NA

Species/Strain: Rat/F 344/N

Lab: BNW

ANIMAL ID: 9001

TRT#: 6

SEX: Male

DAY ON TEST: 617

DOSE: 1M/K NNK/OZONE

DISP: Moribund Sacrifice

HISTO: 26429

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

\* Larynx \* Trachea

OBSERVATIONS

Liver		Leukemia Mononuclear	
[ Leukemia Mononuclear TGLS = 6-10 ]			
* Lung		Alveolar/Bronchiolar Adenoma	
	Interstitial	Fibrosis	Minimal
	Alveolar Epith	Hyperplasia	Atypical, Mild
		Leukemia Mononuclear	
	Alveolar Epith	Metaplasia	Minimal
[ Leukemia Mononuclear TGLS = 3-3 ]			
* Lymph Node, Bronchial		Leukemia Mononuclear	
* Lymph Node, Mediastinal		Leukemia Mononuclear	
[ Leukemia Mononuclear TGLS = 8-10 ]			
* Nose	Olfactory Epi	Degeneration	Hyaline, Mild
	Goblet Cell, Lateral Wall	Hyperplasia	Minimal
	Lateral Wall	Hyperplasia	Minimal
Skin	Dermis	Cyst	Moderate
	SOA, Subcut Tiss	Inflammation	Chronic, Minimal
		Keratoacanthoma	
[ Cyst TGLS = 1-7 ]			
[ Inflammation TGLS = 7-6 ]			
[ Keratoacanthoma TGLS = 2-8 ]			
Spleen		Leukemia Mononuclear	
[ Leukemia Mononuclear TGLS = 4-9 ]			
Testes	Interstit Cell	Adenoma	
[ Adenoma TGLS = 5-10 ]			

PRIMARY CAUSE OF DEATH - Spleen Leukemia Mononuclear

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 88034-07

Test Type: CHRONIC

Route: SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY

Species/Strain: Rat/F 344/N

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Test Compound: Ozone/NNK

CAS Number: OZONNNKCOMB

Date Report Requested: 10/21/2014

Time Report Requested: 05:28:18

First Dose M/F: NA / NA

Lab: BNW

ANIMAL ID: 9002

TRT#: 6

SEX: Male

DAY ON TEST: 562

DOSE: 1M/K NNK/OZONE

DISP: Natural Death

HISTO: 26430

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

\* Larynx

\* Lymph Node, Mediastinal

\* Trachea

MISSING

\* Lymph Node, Bronchial

OBSERVATIONS

\* Lung

Interstitial

Alveolar/Bronchiolar Adenoma

Fibrosis

Minimal

Hemorrhage

Mild

Alveolus

Infiltration Cellular

Histiocyte, Moderate

Alveolar Epith

Metaplasia

Minimal

Mammary Gland

Galactocele

Moderate

[ Galactocele TGLS = 1-7 ]

\* Nose

Olfactory Epi

Degeneration

Hyaline, Mild

Goblet Cell, Lateral Wall

Hyperplasia

Minimal

Lateral Wall

Hyperplasia

Minimal

Pituitary Gland

Pars Distalis

Adenoma

[ Adenoma TGLS = 6-7 ]

Skin

SOA, Subcut Tiss

Inflammation

Chronic, Minimal

Keratoacanthoma

[ Inflammation TGLS = 5-6 ]

[ Keratoacanthoma TGLS = 4-8 ]

Testes

Interstit Cell

Adenoma

[ Adenoma TGLS = 3-7 ]

PRIMARY CAUSE OF DEATH

- Pituitary Gland Pars Distalis Adenoma

\* PROTOCOL REQUIRED TISSUE





Experiment Number: 88034-07

Test Type: CHRONIC

Route: SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY

Species/Strain: Rat/F 344/N

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Test Compound: Ozone/NNK

CAS Number: OZONNNKCOMB

Date Report Requested: 10/21/2014

Time Report Requested: 05:28:18

First Dose M/F: NA / NA

Lab: BNW

ANIMAL ID: 9004

TRT#: 6

SEX: Male

DAY ON TEST: 557

DOSE: 1M/K NNK/OZONE

DISP: Moribund Sacrifice

HISTO: 26432

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

\* Larynx \* Trachea

OBSERVATIONS

Intestine Large, Cecum [ Ulcer TGLS = 7-8 ]		Ulcer	Marked
Kidney [ Infarct TGLS = 4-9 ]		Infarct Leukemia Mononuclear	Mild
Liver [ Hyperplasia TGLS = 3-10 ] [ Leukemia Mononuclear TGLS = 8-10 ]		Hyperplasia Leukemia Mononuclear	Focal, Moderate
* Lung	Interstitial Alveolar Epith Alveolus	Fibrosis Hyperplasia Infiltration Cellular Leukemia Mononuclear	Minimal Atypical, Minimal Histiocyte, Minimal
Lymph Node [ Leukemia Mononuclear TGLS = 2-9 ]	Alveolar Epith Pancreatic	Metaplasia Leukemia Mononuclear	Minimal
* Lymph Node, Bronchial		Leukemia Mononuclear	
* Lymph Node, Mediastinal		Infiltration Cellular	Plasma Cell, Mild
* Nose	Olfactory Epi Goblet Cell, Lateral Wall Lateral Wall	Degeneration Hyperplasia Hyperplasia	Hyaline, Minimal Minimal Minimal
Peritoneum [ Inflammation TGLS = 5-7 ]		Inflammation	Chronic, Minimal
Pituitary Gland [ Adenoma TGLS = 1-9 ]	Pars Distalis	Adenoma	
Skin [ Inflammation TGLS = 6-6 ]	SOA, Subcut Tiss	Inflammation	Chronic, Minimal

\* PROTOCOL REQUIRED TISSUE

**Experiment Number:** 88034-07

**Test Type:** CHRONIC

**Route:** SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY

**Species/Strain:** Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

**Test Compound:** Ozone/NNK

**CAS Number:** OZONNNKCOMB

**Date Report Requested:** 10/21/2014

**Time Report Requested:** 05:28:18

**First Dose M/F:** NA / NA

**Lab:** BNW

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**ANIMAL ID:** 9004

**TRT#:** 6

**SEX:** Male

**DAY ON TEST:** 557

**DOSE:** 1M/K NNK/OZONE

**DISP:** Moribund Sacrifice

**HISTO:** 26432

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**ORGAN AND ACCOUNTABLE SITE STATUS**

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**PRIMARY CAUSE OF DEATH**

- Liver Leukemia Mononuclear

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\* PROTOCOL REQUIRED TISSUE

Experiment Number: 88034-07

Test Type: CHRONIC

Route: SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY

Species/Strain: Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

Test Compound: Ozone/NNK

CAS Number: OZONNNKCOMB

Date Report Requested: 10/21/2014

Time Report Requested: 05:28:18

First Dose M/F: NA / NA

Lab: BNW

ANIMAL ID: 9005

TRT#: 6

SEX: Male

DAY ON TEST: 253

DOSE: 1M/K NNK/OZONE

DISP: Moribund Sacrifice

HISTO: 26433

**ORGAN AND ACCOUNTABLE SITE STATUS**

**NORMAL**

\* Larynx

\* Lymph Node, Bronchial

\* Lymph Node, Mediastinal

\* Trachea

**OBSERVATIONS**

\* Lung

Interstitial

Fibrosis

Minimal

Alveolar Epith

Metaplasia

Minimal

\* Nose

Olfactory Epi

Degeneration

Hyaline, Mild

Lateral Wall

Hyperplasia

Minimal

Skin

SOA, Subcut Tiss

Inflammation

Chronic, Minimal

[ Inflammation TGLS = 2-6 ]

Tooth

Developmental Malformation

[ Developmental Malformation TGLS = 1-4 ]

PRIMARY CAUSE OF DEATH

- Tooth Developmental Malformation

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 88034-07

Test Type: CHRONIC

Route: SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY

Species/Strain: Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

Test Compound: Ozone/NNK

CAS Number: OZONNNKCOMB

Date Report Requested: 10/21/2014

Time Report Requested: 05:28:18

First Dose M/F: NA / NA

Lab: BNW

ANIMAL ID: 9006

TRT#: 6

SEX: Male

DAY ON TEST: 456

DOSE: 1M/K NNK/OZONE

DISP: Moribund Sacrifice

HISTO: 26434

**ORGAN AND ACCOUNTABLE SITE STATUS**

**NORMAL**

\* Larynx

\* Lymph Node, Bronchial

\* Lymph Node, Mediastinal

\* Trachea

**OBSERVATIONS**

Liver		Vacuolization Cytoplasmic	Focal, Minimal
[ Vacuolization Cytoplasmic TGLS = 3-7 ]			
* Lung	Interstitial	Fibrosis	Minimal
	Alveolar Epith	Hyperplasia	Atypical, Minimal
	Alveolus	Infiltration Cellular	Histiocyte, Minimal
	Alveolar Epith	Metaplasia	Minimal
* Nose	Olfactory Epi	Degeneration	Hyaline, Mild
	Goblet Cell, Lateral Wall	Hyperplasia	Minimal
	Lateral Wall	Hyperplasia	Minimal
Peritoneum		Inflammation	Chronic, Minimal
[ Inflammation TGLS = 4-8 ]			
Pituitary Gland	Pars Distalis	Adenoma	
[ Adenoma TGLS = 1-7 ]			
Preputial Gland		Inflammation	Chronic Active, Minimal
[ Inflammation TGLS = 2-7 ]			
Skin	SOA, Subcut Tiss	Inflammation	Chronic, Minimal
[ Inflammation TGLS = 5-6 ]			

PRIMARY CAUSE OF DEATH

- Pituitary Gland Pars Distalis Adenoma

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 88034-07

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Date Report Requested: 10/21/2014

Test Type: CHRONIC

Test Compound: Ozone/NNK

Time Report Requested: 05:28:18

Route: SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY

CAS Number: OZONNNKCOMB

First Dose M/F: NA / NA

Species/Strain: Rat/F 344/N

Lab: BNW

ANIMAL ID: 9007

TRT#: 6

SEX: Male

DAY ON TEST: 736

DOSE: 1M/K NNK/OZONE

DISP: Terminal Sacrifice

HISTO: 26435

ORGAN AND ACCOUNTABLE SITE STATUS

**NORMAL**

\* Larynx \* Trachea

**OBSERVATIONS**

* Lung		Alveolar/Bronchiolar Adenoma	Multiple
		Alveolar/Bronchiolar Carcinoma	Multiple
	Interstitium	Fibrosis	Minimal
	Alveolar Epith	Hyperplasia	Atypical, Moderate
	Alveolar Epith	Metaplasia	Minimal
		Squamous Cell Carcinoma	
[ Squamous Cell Carcinoma TGLS = 4-3+8+9 ]			
* Lymph Node, Bronchial		Alveolar/Bronchiolar Carcinoma	Metastatic (Lung)
		Leukemia Mononuclear	
		Squamous Cell Carcinoma	Metastatic (Lung)
* Lymph Node, Mediastinal		Alveolar/Bronchiolar Carcinoma	Metastatic (Lung)
		Leukemia Mononuclear	
		Squamous Cell Carcinoma	Metastatic (Lung)
		Leukemia Mononuclear	
Lymph Node, Mesenteric			
[ Leukemia Mononuclear TGLS = 7-10 ]			
* Nose	Olfactory Epi	Degeneration	Hyaline, Minimal
	Goblet Cell, Lateral Wall	Hyperplasia	Minimal
	Lateral Wall	Hyperplasia	Minimal
Peritoneum		Inflammation	Chronic, Minimal
[ Inflammation TGLS = 5-6 ]			
Pituitary Gland	Pars Distalis	Adenoma	
[ Adenoma TGLS = 1-11 ]			
Skin	SOA, Subcut Tiss	Inflammation	Chronic, Minimal
[ Inflammation TGLS = 6-7 ]			
Spleen		Leukemia Mononuclear	
[ Leukemia Mononuclear TGLS = 3-11 ]			
Testes	Interstit Cell	Adenoma	

\* PROTOCOL REQUIRED TISSUE

**Experiment Number:** 88034-07

**Test Type:** CHRONIC

**Route:** SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY

**Species/Strain:** Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

**Test Compound:** Ozone/NNK

**CAS Number:** OZONNNKCOMB

**Date Report Requested:** 10/21/2014

**Time Report Requested:** 05:28:18

**First Dose M/F:** NA / NA

**Lab:** BNW

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**ANIMAL ID:** 9007

**TRT#:** 6

**SEX:** Male

**DAY ON TEST:** 736

**DOSE:** 1M/K NNK/OZONE

**DISP:** Terminal Sacrifice

**HISTO:** 26435

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**ORGAN AND ACCOUNTABLE SITE STATUS**

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[ Adenoma TGLS = 2-11 ]

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PRIMARY CAUSE OF DEATH

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\* PROTOCOL REQUIRED TISSUE

Experiment Number: 88034-07

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Date Report Requested: 10/21/2014

Test Type: CHRONIC

Test Compound: Ozone/NNK

Time Report Requested: 05:28:18

Route: SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY

CAS Number: OZONNNKCOMB

First Dose M/F: NA / NA

Species/Strain: Rat/F 344/N

Lab: BNW

ANIMAL ID: 9008

TRT#: 6

SEX: Male

DAY ON TEST: 683

DOSE: 1M/K NNK/OZONE

DISP: Moribund Sacrifice

HISTO: 26436

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

\* Larynx

\* Lymph Node, Mediastinal

\* Trachea

MISSING

\* Lymph Node, Bronchial

OBSERVATIONS

Kidney		Nephropathy	Marked
[ Nephropathy TGLS = 8-9 ]			
Liver		Degeneration	Cystic, Mild
		Hyperplasia	Focal, Mild
		Leukemia Mononuclear	
[ Degeneration TGLS = 5-8 ]			
[ Hyperplasia TGLS = 11-8 ]			
[ Leukemia Mononuclear TGLS = 6-8 ]			
* Lung		Alveolar/Bronchiolar Adenoma	Multiple
		Alveolar/Bronchiolar Carcinoma	
	Interstitial	Fibrosis	Minimal
	Alveolar Epith	Hyperplasia	Atypical, Mild
	Alveolar Epith	Metaplasia	Minimal
[ Alveolar/Bronchiolar Carcinoma TGLS = 2-3 ]			
[ Hyperplasia TGLS = 1-8 ]			
* Nose	Olfactory Epi	Degeneration	Hyaline, Mild
	Lateral Wall	Hyperplasia	Minimal
		Inflammation	Chronic, Minimal
Peritoneum			
[ Inflammation TGLS = 9-7 ]			
Skin	SOA, Subcut Tiss	Inflammation	Chronic, Minimal
[ Inflammation TGLS = 10-6 ]			
Spleen		Fibrosis	Moderate
		Leukemia Mononuclear	
[ Fibrosis TGLS = 4-8 ]			
[ Leukemia Mononuclear TGLS = 3-8 ]			

\* PROTOCOL REQUIRED TISSUE

**Experiment Number:** 88034-07

**Test Type:** CHRONIC

**Route:** SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY

**Species/Strain:** Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

**Test Compound:** Ozone/NNK

**CAS Number:** OZONNNKCOMB

**Date Report Requested:** 10/21/2014

**Time Report Requested:** 05:28:18

**First Dose M/F:** NA / NA

**Lab:** BNW

---

**ANIMAL ID:** 9008

**TRT#:** 6

**SEX:** Male

**DAY ON TEST:** 683

**DOSE:** 1M/K NNK/OZONE

**DISP:** Moribund Sacrifice

**HISTO:** 26436

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**ORGAN AND ACCOUNTABLE SITE STATUS**

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Stom Forestom

Note: TGL #2 could not be identified at trim, therefore no section of forestomach was taken.

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**PRIMARY CAUSE OF DEATH**

- Lung Alveolar/Bronchiolar Carcinoma

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\* PROTOCOL REQUIRED TISSUE



Experiment Number: 88034-07

Test Type: CHRONIC

Route: SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY

Species/Strain: Rat/F 344/N

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Test Compound: Ozone/NNK

CAS Number: OZONNNKCOMB

Date Report Requested: 10/21/2014

Time Report Requested: 05:28:18

First Dose M/F: NA / NA

Lab: BNW

ANIMAL ID: 9009

TRT#: 6

SEX: Male

DAY ON TEST: 641

DOSE: 1M/K NNK/OZONE

DISP: Moribund Sacrifice

HISTO: 26437

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

\* Larynx \* Trachea

MISSING

\* Lymph Node, Mediastinal

OBSERVATIONS

Kidney		Nephropathy	Moderate
[ Nephropathy TGLS = 10-9 ]			
Liver		Degeneration Leukemia Mononuclear	Cystic, Mild
[ Leukemia Mononuclear TGLS = 9-6 ]			
* Lung	Interstitium	Alveolar/Bronchiolar Carcinoma Fibrosis Leukemia Mononuclear	Minimal
	Alveolar Epith	Metaplasia Sarcoma	Minimal Metastatic (Skin)
[ Alveolar/Bronchiolar Carcinoma TGLS = 2-6 ]			
[ Leukemia Mononuclear TGLS = 3-3 ]			
[ Sarcoma TGLS = 1-3 ]			
* Lymph Node, Bronchial		Leukemia Mononuclear	
Mesentery	Fat	Necrosis	Moderate
[ Necrosis TGLS = 7-8 ]			
* Nose	Olfactory Epi Goblet Cell, Lateral Wall Lateral Wall	Degeneration Hyperplasia Hyperplasia Inflammation	Hyaline, Mild Minimal Minimal Chronic, Minimal
Peritoneum			
[ Inflammation TGLS = 11-8 ]			
Skin	SOA, Subcut Tiss SOA, Subcut Tiss SOA, Subcut Tiss	Inflammation Osteosarcoma Sarcoma	Chronic, Minimal
[ Osteosarcoma TGLS = 5-7 ]			

\* PROTOCOL REQUIRED TISSUE

**Experiment Number:** 88034-07

**Test Type:** CHRONIC

**Route:** SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY

**Species/Strain:** Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

**Test Compound:** Ozone/NNK

**CAS Number:** OZONNNKCOMB

**Date Report Requested:** 10/21/2014

**Time Report Requested:** 05:28:18

**First Dose M/F:** NA / NA

**Lab:** BNW

---

**ANIMAL ID:** 9009

**TRT#:** 6

**SEX:** Male

**DAY ON TEST:** 641

**DOSE:** 1M/K NNK/OZONE

**DISP:** Moribund Sacrifice

**HISTO:** 26437

---

**ORGAN AND ACCOUNTABLE SITE STATUS**

---

[ Sarcoma TGLS = 6-6 ]

Spleen

Leukemia Mononuclear

[ Leukemia Mononuclear TGLS = 8-8 ]

---

PRIMARY CAUSE OF DEATH

- Skin SOA Subcut Tiss Sarcoma

CONTRIBUTORY CAUSE OF DEATH

- Lung Alveolar/Bronchiolar Carcinoma;Spleen Leukemia Mononuclear

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\* PROTOCOL REQUIRED TISSUE

Experiment Number: 88034-07

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Date Report Requested: 10/21/2014

Test Type: CHRONIC

Test Compound: Ozone/NNK

Time Report Requested: 05:28:18

Route: SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY

CAS Number: OZONNNKCOMB

First Dose M/F: NA / NA

Species/Strain: Rat/F 344/N

Lab: BNW

ANIMAL ID: 9010

TRT#: 6

SEX: Male

DAY ON TEST: 603

DOSE: 1M/K NNK/OZONE

DISP: Moribund Sacrifice

HISTO: 26438

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

\* Larynx

\* Lymph Node, Mediastinal

\* Trachea

MISSING

\* Lymph Node, Bronchial

OBSERVATIONS

Kidney [ Nephropathy TGLS = 6-7 ]		Nephropathy	Moderate
Liver [ Leukemia Mononuclear TGLS = 5-8 ]		Degeneration Leukemia Mononuclear	Cystic, Mild
* Lung [ Hyperplasia TGLS = 2-3+7 ]	Interstitial Alveolar Epith	Alveolar/Bronchiolar Adenoma Fibrosis Hyperplasia Leukemia Mononuclear Metaplasia	Multiple Minimal Atypical, Moderate Minimal
Lymph Node, Mandibular [ Infiltration Cellular TGLS = 1-7 ]		Infiltration Cellular	Plasma Cell, Moderate
* Nose	Olfactory Epi Goblet Cell, Lateral Wall Lateral Wall	Degeneration Hyperplasia Hyperplasia	Hyaline, Moderate Minimal Minimal
Pituitary Gland [ Adenoma TGLS = 3-9 ]	Pars Distalis	Adenoma	
Skin [ Inflammation TGLS = 9-6 ] [ Squamous Cell Papilloma TGLS = 4-8 ]	SOA, Subcut Tiss	Inflammation Squamous Cell Papilloma	Chronic, Minimal
Spleen [ Fibrosis TGLS = 7-8 ]		Fibrosis Leukemia Mononuclear	Moderate

\* PROTOCOL REQUIRED TISSUE

**Experiment Number:** 88034-07

**Test Type:** CHRONIC

**Route:** SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY

**Species/Strain:** Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

**Test Compound:** Ozone/NNK

**CAS Number:** OZONNNKCOMB

**Date Report Requested:** 10/21/2014

**Time Report Requested:** 05:28:18

**First Dose M/F:** NA / NA

**Lab:** BNW

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**ANIMAL ID:** 9010

**TRT#:** 6

**SEX:** Male

**DAY ON TEST:** 603

**DOSE:** 1M/K NNK/OZONE

**DISP:** Moribund Sacrifice

**HISTO:** 26438

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**ORGAN AND ACCOUNTABLE SITE STATUS**

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[ Leukemia Mononuclear TGLS = 8-8 ]

---

**PRIMARY CAUSE OF DEATH**

- Spleen Leukemia Mononuclear

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\* PROTOCOL REQUIRED TISSUE

Experiment Number: 88034-07

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Date Report Requested: 10/21/2014

Test Type: CHRONIC

Test Compound: Ozone/NNK

Time Report Requested: 05:28:18

Route: SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY

CAS Number: OZONNNKCOMB

First Dose M/F: NA / NA

Species/Strain: Rat/F 344/N

Lab: BNW

ANIMAL ID: 9011

TRT#: 6

SEX: Male

DAY ON TEST: 603

DOSE: 1M/K NNK/OZONE

DISP: Moribund Sacrifice

HISTO: 26439

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

\* Larynx \* Trachea

OBSERVATIONS

Liver		Leukemia Mononuclear	
[ Leukemia Mononuclear TGLS = 3,7-8+9 ]			
* Lung		Alveolar/Bronchiolar Adenoma	
	Interstitial	Fibrosis	Minimal
	Alveolar Epith	Hyperplasia	Atypical, Marked
	Alveolar Epith	Metaplasia	Minimal
[ Hyperplasia TGLS = 8-3+10 ]			
Lymph Node	Renal	Leukemia Mononuclear	
[ Leukemia Mononuclear TGLS = 4-11 ]			
* Lymph Node, Bronchial		Leukemia Mononuclear	
Lymph Node, Mandibular		Leukemia Mononuclear	
[ Leukemia Mononuclear TGLS = 1-9 ]			
* Lymph Node, Mediastinal		Leukemia Mononuclear	
* Nose	Olfactory Epi	Degeneration	Hyaline, Moderate
	Goblet Cell, Lateral Wall	Hyperplasia	Minimal
	Lateral Wall	Hyperplasia	Minimal
Peritoneum		Inflammation	Chronic, Minimal
[ Inflammation TGLS = 5-7 ]			
Skin	SOA, Subcut Tiss	Inflammation	Chronic, Minimal
[ Inflammation TGLS = 6-6 ]			
Spleen		Leukemia Mononuclear	
[ Leukemia Mononuclear TGLS = 2-8 ]			

PRIMARY CAUSE OF DEATH - Spleen Leukemia Mononuclear

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 88034-07

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Date Report Requested: 10/21/2014

Test Type: CHRONIC

Test Compound: Ozone/NNK

Time Report Requested: 05:28:18

Route: SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY

CAS Number: OZONNNKCOMB

First Dose M/F: NA / NA

Species/Strain: Rat/F 344/N

Lab: BNW

ANIMAL ID: 9012

TRT#: 6

SEX: Male

DAY ON TEST: 687

DOSE: 1M/K NNK/OZONE

DISP: Moribund Sacrifice

HISTO: 26440

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

\* Larynx \* Trachea

OBSERVATIONS

Kidney		Nephropathy	Moderate
[ Nephropathy TGLS = 10-11 ]			
Liver		Leukemia Mononuclear	
[ Leukemia Mononuclear TGLS = 5-10 ]			
* Lung		Alveolar/Bronchiolar Adenoma	Multiple
	Interstitial	Fibrosis	Minimal
	Alveolar Epith	Leukemia Mononuclear	
[ Leukemia Mononuclear TGLS = 9-3 ]		Metaplasia	Minimal
* Lymph Node, Bronchial		Leukemia Mononuclear	
Lymph Node, Mandibular		Leukemia Mononuclear	
[ Leukemia Mononuclear TGLS = 1-9 ]			
* Lymph Node, Mediastinal		Leukemia Mononuclear	
Mesentery	Fat	Necrosis	Moderate
[ Necrosis TGLS = 7-8 ]			
* Nose	Olfactory Epi	Degeneration	Hyaline, Mild
	Goblet Cell, Lateral Wall	Hyperplasia	Minimal
	Lateral Wall	Hyperplasia	Minimal
Peritoneum		Inflammation	Chronic, Minimal
[ Inflammation TGLS = 6-7 ]			
Pituitary Gland	Pars Distalis	Adenoma	
[ Adenoma TGLS = 2-9 ]			
Skin	SOA, Subcut Tiss	Inflammation	Chronic, Minimal
[ Inflammation TGLS = 8-6 ]			
Spleen		Leukemia Mononuclear	
[ Leukemia Mononuclear TGLS = 3,4-8 ]			

PRIMARY CAUSE OF DEATH - Spleen Leukemia Mononuclear

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 88034-07

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Date Report Requested: 10/21/2014

Test Type: CHRONIC

Test Compound: Ozone/NNK

Time Report Requested: 05:28:18

Route: SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY

CAS Number: OZONNNKCOMB

First Dose M/F: NA / NA

Species/Strain: Rat/F 344/N

Lab: BNW

ANIMAL ID: 9013

TRT#: 6

SEX: Male

DAY ON TEST: 683

DOSE: 1M/K NNK/OZONE

DISP: Moribund Sacrifice

HISTO: 26441

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

\* Larynx \* Trachea

OBSERVATIONS

Liver		Degeneration	Cystic, Moderate
	Bile Duct	Hyperplasia	Marked
		Hyperplasia	Focal, Marked
		Leukemia Mononuclear	

[ Hyperplasia TGLS = 6-8 ]  
[ Leukemia Mononuclear TGLS = 5-8 ]

* Lung		Alveolar/Bronchiolar Adenoma	
	Interstitialium	Fibrosis	Minimal
		Leukemia Mononuclear	
	Alveolar Epith	Metaplasia	Minimal

Note: NO MICROSCOPICALLY CORRESPONDING LESION FOR TGLs = 1-3.  
[ Alveolar/Bronchiolar Adenoma TGLS = 2-3 ]

* Lymph Node, Bronchial		Leukemia Mononuclear	
* Lymph Node, Mediastinal		Leukemia Mononuclear	

* Nose	Olfactory Epi	Degeneration	Hyaline, Mild
	Goblet Cell, Lateral Wall	Hyperplasia	Minimal
	Lateral Wall	Hyperplasia	Minimal
Pituitary Gland	Pars Distalis	Adenoma	

[ Adenoma TGLS = 7-7 ]

Skin	SOA, Subcut Tiss	Inflammation	Chronic, Minimal
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[ Inflammation TGLS = 8-6 ]

Spleen		Leukemia Mononuclear	
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[ Leukemia Mononuclear TGLS = 4-7 ]

Testes	Interstit Cell	Adenoma	
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[ Adenoma TGLS = 3-7 ]

PRIMARY CAUSE OF DEATH - Spleen Leukemia Mononuclear

\* PROTOCOL REQUIRED TISSUE





**Experiment Number:** 88034-07

**Test Type:** CHRONIC

**Route:** SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY

**Species/Strain:** Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

**Test Compound:** Ozone/NNK

**CAS Number:** OZONNNKCOMB

**Date Report Requested:** 10/21/2014

**Time Report Requested:** 05:28:18

**First Dose M/F:** NA / NA

**Lab:** BNW

**ANIMAL ID:** 9014

**TRT#:** 6

**SEX:** Male

**DAY ON TEST:** 669

**DOSE:** 1M/K NNK/OZONE

**DISP:** Moribund Sacrifice

**HISTO:** 26442

**ORGAN AND ACCOUNTABLE SITE STATUS**

Lymph Node, Mesenteric [ Leukemia Mononuclear TGLS = 14-12 ]		Leukemia Mononuclear	
* Nose	Olfactory Epi	Degeneration	Hyaline, Mild
	Lateral Wall	Hyperplasia	Minimal
Skin	SOA, Subcut Tiss	Inflammation	Chronic, Minimal
[ Inflammation TGLS = 15-6 ]			
Spleen		Leukemia Mononuclear	
[ Leukemia Mononuclear TGLS = 9,10-12 ]			
Testes	Interstit Cell	Adenoma	
[ Adenoma TGLS = 8-9 ]			

**PRIMARY CAUSE OF DEATH** - Spleen Leukemia Mononuclear

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 88034-07

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Date Report Requested: 10/21/2014

Test Type: CHRONIC

Test Compound: Ozone/NNK

Time Report Requested: 05:28:18

Route: SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY

CAS Number: OZONNNKCOMB

First Dose M/F: NA / NA

Species/Strain: Rat/F 344/N

Lab: BNW

ANIMAL ID: 9015

TRT#: 6

SEX: Male

DAY ON TEST: 736

DOSE: 1M/K NNK/OZONE

DISP: Terminal Sacrifice

HISTO: 26443

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

\* Larynx

\* Lymph Node, Mediastinal

\* Trachea

MISSING

\* Lymph Node, Bronchial

OBSERVATIONS

Kidney		Nephropathy	Marked
[ Nephropathy TGLS = 8-10 ]			
Liver		Degeneration	Cystic, Mild
		Hyperplasia	Focal, Moderate
		Leukemia Mononuclear	
[ Degeneration TGLS = 6-12 ]			
[ Leukemia Mononuclear TGLS = 7-12 ]			
* Lung		Alveolar/Bronchiolar Carcinoma	Multiple
	Interstitial	Fibrosis	Minimal
	Alveolar Epith	Hyperplasia	Atypical, Moderate
	Alveolus	Infiltration Cellular	Histiocyte, Mild
		Leukemia Mononuclear	
	Alveolar Epith	Metaplasia	Minimal
[ Alveolar/Bronchiolar Carcinoma TGLS = 9-3+7+8 ]			
* Nose	Olfactory Epi	Degeneration	Hyaline, Minimal
	Goblet Cell, Lateral Wall	Hyperplasia	Minimal
	Lateral Wall	Hyperplasia	Minimal
Skin	Prepuce	Inflammation	Suppurative, Moderate
	SOA, Subcut Tiss	Inflammation	Chronic, Minimal
[ Inflammation TGLS = 2-9 ]			
[ Inflammation TGLS = 10-6 ]			
Spleen		Fibrosis	Moderate
		Leukemia Mononuclear	
[ Fibrosis TGLS = 5-11 ]			
[ Leukemia Mononuclear TGLS = 4-11 ]			

\* PROTOCOL REQUIRED TISSUE

**Experiment Number:** 88034-07

**Test Type:** CHRONIC

**Route:** SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY

**Species/Strain:** Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

**Test Compound:** Ozone/NNK

**CAS Number:** OZONNNKCOMB

**Date Report Requested:** 10/21/2014

**Time Report Requested:** 05:28:18

**First Dose M/F:** NA / NA

**Lab:** BNW

---

**ANIMAL ID:** 9015

**TRT#:** 6

**SEX:** Male

**DAY ON TEST:** 736

**DOSE:** 1M/K NNK/OZONE

**DISP:** Terminal Sacrifice

**HISTO:** 26443

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**ORGAN AND ACCOUNTABLE SITE STATUS**

Testes

Interstit Cell

Adenoma

[ Adenoma TGLS = 3-11 ]

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PRIMARY CAUSE OF DEATH

-

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\* PROTOCOL REQUIRED TISSUE

Experiment Number: 88034-07

Test Type: CHRONIC

Route: SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY

Species/Strain: Rat/F 344/N

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Test Compound: Ozone/NNK

CAS Number: OZONNNKCOMB

Date Report Requested: 10/21/2014

Time Report Requested: 05:28:18

First Dose M/F: NA / NA

Lab: BNW

ANIMAL ID: 9016

TRT#: 6

SEX: Male

DAY ON TEST: 640

DOSE: 1M/K NNK/OZONE

DISP: Moribund Sacrifice

HISTO: 26444

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

\* Larynx

\* Lymph Node, Mediastinal

\* Trachea

OBSERVATIONS

Kidney [ Nephropathy TGLS = 4-8 ]		Nephropathy	Moderate
Liver [ Leukemia Mononuclear TGLS = 3-7 ]		Leukemia Mononuclear	
* Lung [ Alveolar/Bronchiolar Carcinoma TGLS = 7-3 ] [ Leukemia Mononuclear TGLS = 1-3 ]	Interstitial Alveolar Epith	Alveolar/Bronchiolar Adenoma Alveolar/Bronchiolar Carcinoma Fibrosis Leukemia Mononuclear Metaplasia	Minimal Minimal
* Lymph Node, Bronchial		Leukemia Mononuclear	
* Nose	Olfactory Epi Goblet Cell, Lateral Wall Lateral Wall Pars Distalis	Degeneration Hyperplasia Hyperplasia Adenoma	Hyaline, Mild Minimal Minimal
Pituitary Gland [ Adenoma TGLS = 2-7 ]			
Skin [ Inflammation TGLS = 8-6 ]	SOA, Subcut Tiss	Inflammation	Chronic, Minimal
Spleen [ Leukemia Mononuclear TGLS = 5-7 ]		Leukemia Mononuclear	

PRIMARY CAUSE OF DEATH - Spleen Leukemia Mononuclear

\* PROTOCOL REQUIRED TISSUE



Experiment Number: 88034-07

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Date Report Requested: 10/21/2014

Test Type: CHRONIC

Test Compound: Ozone/NNK

Time Report Requested: 05:28:18

Route: SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY

CAS Number: OZONNNKCOMB

First Dose M/F: NA / NA

Species/Strain: Rat/F 344/N

Lab: BNW

ANIMAL ID: 9018

TRT#: 6

SEX: Male

DAY ON TEST: 655

DOSE: 1M/K NNK/OZONE

DISP: Moribund Sacrifice

HISTO: 26446

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

\* Larynx

\* Lymph Node, Bronchial

\* Trachea

MISSING

\* Lymph Node, Mediastinal

OBSERVATIONS

Liver		Angiectasis	Mild
		Leukemia Mononuclear	
[ Angiectasis TGLS = 3-9 ]			
* Lung		Alveolar/Bronchiolar Adenoma	
	Interstitial	Fibrosis	Minimal
	Alveolar Epith	Hyperplasia	Atypical, Mild
	Alveolus	Infiltration Cellular	Histiocyte, Mild
	Alveolar Epith	Metaplasia	Minimal
[ Alveolar/Bronchiolar Adenoma TGLS = 8-3 ]			
* Nose	Olfactory Epi	Degeneration	Hyaline, Mild
	Goblet Cell, Lateral Wall	Hyperplasia	Minimal
	Lateral Wall	Hyperplasia	Minimal
Penis		Edema	Mild
[ Edema TGLS = 1-8 ]			
Peritoneum		Inflammation	Chronic, Minimal
[ Inflammation TGLS = 6-7 ]			
Pituitary Gland	Pars Distalis	Adenoma	
[ Adenoma TGLS = 2-8 ]			
Skin	SOA, Subcut Tiss	Inflammation	Chronic, Minimal
[ Inflammation TGLS = 7-6 ]			
Spleen		Leukemia Mononuclear	
[ Leukemia Mononuclear TGLS = 4-8 ]			
Testes	Interstit Cell	Adenoma	
[ Adenoma TGLS = 5-9 ]			

PRIMARY CAUSE OF DEATH

- Pituitary Gland Pars Distalis Adenoma

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 88034-07

Test Type: CHRONIC

Route: SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY

Species/Strain: Rat/F 344/N

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Test Compound: Ozone/NNK

CAS Number: OZONNNKCOMB

Date Report Requested: 10/21/2014

Time Report Requested: 05:28:18

First Dose M/F: NA / NA

Lab: BNW

ANIMAL ID: 9019

TRT#: 6

SEX: Male

DAY ON TEST: 470

DOSE: 1M/K NNK/OZONE

DISP: Moribund Sacrifice

HISTO: 26447

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

\* Larynx

\* Lymph Node, Bronchial

\* Trachea

OBSERVATIONS

Kidney

Transit Epithe

Carcinoma

Leukemia Mononuclear

[ Carcinoma TGLS = 7-6 ]

\* Lung

Interstitial

Fibrosis

Minimal

Alveolar Epith

Hyperplasia

Atypical, Minimal

Alveolus

Infiltration Cellular

Histiocyte, Minimal

Leukemia Mononuclear

Alveolar Epith

Metaplasia

Minimal

Lymph Node

Lumbar

Leukemia Mononuclear

Renal

Leukemia Mononuclear

Leukemia Mononuclear

Note: TGL #3 and #10 are mononuclear cell leukemia in the axillary lymph node. This site is not available for lymph node in this system.

[ Leukemia Mononuclear TGLS = 11-9 ]

[ Leukemia Mononuclear TGLS = 8-11 ]

[ Leukemia Mononuclear TGLS = 3-10, 10-7 ]

Lymph Node, Mandibular

Leukemia Mononuclear

[ Leukemia Mononuclear TGLS = 1-6 ]

\* Lymph Node, Mediastinal

Leukemia Mononuclear

[ Leukemia Mononuclear TGLS = 5-2 ]

Mammary Gland

Fibroadenoma

[ Fibroadenoma TGLS = 4-9 ]

\* Nose

Olfactory Epi

Degeneration

Hyaline, Minimal

Goblet Cell, Lateral Wall

Hyperplasia

Minimal

Lateral Wall

Hyperplasia

Minimal

Skin

SOA, Subcut Tiss

Inflammation

Chronic, Minimal

Squamous Cell Papilloma

[ Inflammation TGLS = 9-8 ]

\* PROTOCOL REQUIRED TISSUE

**Experiment Number:** 88034-07

**Test Type:** CHRONIC

**Route:** SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY

**Species/Strain:** Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

**Test Compound:** Ozone/NNK

**CAS Number:** OZONNNKCOMB

**Date Report Requested:** 10/21/2014

**Time Report Requested:** 05:28:18

**First Dose M/F:** NA / NA

**Lab:** BNW

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**ANIMAL ID:** 9019

**TRT#:** 6

**SEX:** Male

**DAY ON TEST:** 470

**DOSE:** 1M/K NNK/OZONE

**DISP:** Moribund Sacrifice

**HISTO:** 26447

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**ORGAN AND ACCOUNTABLE SITE STATUS**

[ Squamous Cell Papilloma TGLS = 2-12 ]

Spleen

Leukemia Mononuclear

[ Leukemia Mononuclear TGLS = 6-7 ]

---

**PRIMARY CAUSE OF DEATH**

- Spleen Leukemia Mononuclear

\* PROTOCOL REQUIRED TISSUE



Experiment Number: 88034-07

Test Type: CHRONIC

Route: SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY

Species/Strain: Rat/F 344/N

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Test Compound: Ozone/NNK

CAS Number: OZONNNKCOMB

Date Report Requested: 10/21/2014

Time Report Requested: 05:28:18

First Dose M/F: NA / NA

Lab: BNW

ANIMAL ID: 9020

TRT#: 6

SEX: Male

DAY ON TEST: 697

DOSE: 1M/K NNK/OZONE

DISP: Moribund Sacrifice

HISTO: 26448

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

\* Larynx

\* Trachea

MISSING

\* Lymph Node, Bronchial

\* Lymph Node, Mediastinal

OBSERVATIONS

Heart	Atrium	Thrombosis	Marked
[ Thrombosis TGLS = 8-8 ]			
Liver		Degeneration	Cystic, Moderate
		Hyperplasia	Focal, Marked
	Centrilobular	Necrosis	Moderate
		Vacuolization Cytoplasmic	Moderate
[ Hyperplasia TGLS = 3-9 ]			
[ Necrosis TGLS = 4-9 ]			
* Lung		Alveolar/Bronchiolar Adenoma	
		Alveolar/Bronchiolar Carcinoma	
	Interstitium	Fibrosis	Minimal
	Alveolar Epith	Hyperplasia	Atypical, Moderate
	Alveolus	Infiltration Cellular	Histiocyte, Minimal
	Alveolar Epith	Metaplasia	Minimal
[ Hyperplasia TGLS = 7-3 ]			
* Nose	Olfactory Epi	Degeneration	Hyaline, Moderate
	Goblet Cell, Lateral Wall	Hyperplasia	Minimal
	Lateral Wall	Hyperplasia	Minimal
		Inflammation	Chronic, Minimal
Peritoneum			
[ Inflammation TGLS = 5-7 ]			
Pituitary Gland	Pars Distalis	Adenoma	
[ Adenoma TGLS = 1-8 ]			
Skin	SOA, Subcut Tiss	Inflammation	Chronic, Minimal
[ Inflammation TGLS = 6-6 ]			
Spleen		Fibrosis	Marked

\* PROTOCOL REQUIRED TISSUE

**Experiment Number:** 88034-07

**Test Type:** CHRONIC

**Route:** SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY

**Species/Strain:** Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

**Test Compound:** Ozone/NNK

**CAS Number:** OZONNNKCOMB

**Date Report Requested:** 10/21/2014

**Time Report Requested:** 05:28:18

**First Dose M/F:** NA / NA

**Lab:** BNW

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**ANIMAL ID:** 9020

**TRT#:** 6

**SEX:** Male

**DAY ON TEST:** 697

**DOSE:** 1M/K NNK/OZONE

**DISP:** Moribund Sacrifice

**HISTO:** 26448

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**ORGAN AND ACCOUNTABLE SITE STATUS**

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[ Fibrosis TGLS = 2-8 ]

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**PRIMARY CAUSE OF DEATH**

- Heart Atrium Thrombosis

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\* PROTOCOL REQUIRED TISSUE



Experiment Number: 88034-07

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Date Report Requested: 10/21/2014

Test Type: CHRONIC

Test Compound: Ozone/NNK

Time Report Requested: 05:28:18

Route: SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY

CAS Number: OZONNNKCOMB

First Dose M/F: NA / NA

Species/Strain: Rat/F 344/N

Lab: BNW

ANIMAL ID: 9022

TRT#: 6

SEX: Male

DAY ON TEST: 640

DOSE: 1M/K NNK/OZONE

DISP: Moribund Sacrifice

HISTO: 26450

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

\* Trachea

MISSING

\* Lymph Node, Bronchial

\* Lymph Node, Mediastinal

OBSERVATIONS

* Larynx		Inflammation	Suppurative, Minimal
Liver		Degeneration	Cystic, Moderate
		Hyperplasia	Focal, Marked
		Infiltration Cellular	Mixed Cell, Moderate
		Necrosis	Focal, Moderate
	[ Hyperplasia TGLS = 3-10 ]		
	[ Necrosis TGLS = 4-10 ]		
* Lung	Mediastinum	Alveolar/Bronchiolar Carcinoma	Metastatic (Lung)
		Alveolar/Bronchiolar Carcinoma	
	Interstitium	Fibrosis	Minimal
	Alveolar Epith	Hyperplasia	Atypical, Mild
	Alveolar Epith	Metaplasia	Minimal
	[ Hyperplasia TGLS = 10-11 ]		
Mesentery	Fat	Necrosis	Moderate
	[ Necrosis TGLS = 7-8 ]		
* Nose	Olfactory Epi	Degeneration	Hyaline, Minimal
	Goblet Cell, Lateral Wall	Hyperplasia	Minimal
	Lateral Wall	Hyperplasia	Minimal
Peritoneum		Inflammation	Chronic, Minimal
	[ Inflammation TGLS = 8-7 ]		
Pituitary Gland	Pars Distalis	Adenoma	
	[ Adenoma TGLS = 2-8 ]		
Skin	SOA, Subcut Tiss	Inflammation	Chronic, Minimal
	Subcut Tiss	Inflammation	Chronic, Marked
	Subcut Tiss	Necrosis	Marked

\* PROTOCOL REQUIRED TISSUE

**Experiment Number:** 88034-07  
**Test Type:** CHRONIC  
**Route:** SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY  
**Species/Strain:** Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

**Test Compound:** Ozone/NNK  
**CAS Number:** OZONNNKCOMB

**Date Report Requested:** 10/21/2014  
**Time Report Requested:** 05:28:18  
**First Dose M/F:** NA / NA  
**Lab:** BNW

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<b>ANIMAL ID:</b> 9022	<b>TRT#:</b> 6	<b>SEX:</b> Male	<b>DAY ON TEST:</b> 640
	<b>DOSE:</b> 1M/K NNK/OZONE	<b>DISP:</b> Moribund Sacrifice	<b>HISTO:</b> 26450

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**ORGAN AND ACCOUNTABLE SITE STATUS**

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[ Inflammation TGLS = 1-9 ]		
[ Inflammation TGLS = 9-6 ]		
Spleen	Hematopoietic Cell Proliferation	Marked
	Necrosis	Moderate
[ Hematopoietic Cell Proliferation TGLS = 5-8 ]		
[ Necrosis TGLS = 6-8 ]		

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PRIMARY CAUSE OF DEATH -

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\* PROTOCOL REQUIRED TISSUE

Experiment Number: 88034-07

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Date Report Requested: 10/21/2014

Test Type: CHRONIC

Test Compound: Ozone/NNK

Time Report Requested: 05:28:18

Route: SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY

CAS Number: OZONNNKCOMB

First Dose M/F: NA / NA

Species/Strain: Rat/F 344/N

Lab: BNW

ANIMAL ID: 9023

TRT#: 6

SEX: Male

DAY ON TEST: 725

DOSE: 1M/K NNK/OZONE

DISP: Moribund Sacrifice

HISTO: 26451

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

\* Trachea

OBSERVATIONS

Kidney		Nephropathy	Moderate
	[ Nephropathy TGLS = 12-9 ]		
* Larynx		Inflammation	Suppurative, Mild
Liver		Hepatodiaphragmatic Nodule	
		Leukemia Mononuclear	
	[ Hepatodiaphragmatic Nodule TGLS = 11-7 ]		
	[ Leukemia Mononuclear TGLS = 10-7 ]		
* Lung		Alveolar/Bronchiolar Adenoma	Multiple
		Fibrosis	Minimal
		Hyperplasia	Atypical, Mild
		Leukemia Mononuclear	
		Metaplasia	Minimal
	Interstitial		
	Alveolar Epith		
	Alveolar Epith		
	[ Alveolar/Bronchiolar Adenoma TGLS = 4-3 ]		
	[ Leukemia Mononuclear TGLS = 3-3 ]		
* Lymph Node, Bronchial		Leukemia Mononuclear	
Lymph Node, Mandibular		Leukemia Mononuclear	
	[ Leukemia Mononuclear TGLS = 1-7 ]		
* Lymph Node, Mediastinal		Leukemia Mononuclear	
Mesentery	Fat	Necrosis	Moderate
	[ Necrosis TGLS = 9-9 ]		
* Nose	Olfactory Epi	Degeneration	Hyaline, Mild
	Goblet Cell, Lateral Wall	Hyperplasia	Minimal
	Lateral Wall	Hyperplasia	Minimal
Pituitary Gland	Pars Distalis	Adenoma	
	[ Adenoma TGLS = 2-7 ]		
Skin	Sebaceous GI	Adenoma	
	Prepuce	Inflammation	Suppurative, Mild

\* PROTOCOL REQUIRED TISSUE

**Experiment Number:** 88034-07

**Test Type:** CHRONIC

**Route:** SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY

**Species/Strain:** Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

**Test Compound:** Ozone/NNK

**CAS Number:** OZONNNKCOMB

**Date Report Requested:** 10/21/2014

**Time Report Requested:** 05:28:18

**First Dose M/F:** NA / NA

**Lab:** BNW

**ANIMAL ID:** 9023

**TRT#:** 6

**SEX:** Male

**DAY ON TEST:** 725

**DOSE:** 1M/K NNK/OZONE

**DISP:** Moribund Sacrifice

**HISTO:** 26451

**ORGAN AND ACCOUNTABLE SITE STATUS**

	SOA, Subcut Tiss	Inflammation	Chronic, Minimal
[ Adenoma TGLS = 14-11 ]			
[ Inflammation TGLS = 5-10 ]			
[ Inflammation TGLS = 13-6 ]			
Spleen		Fibrosis Leukemia Mononuclear	Mild
[ Fibrosis TGLS = 8-8 ]			
[ Leukemia Mononuclear TGLS = 7-8 ]			
Testes	Interstit Cell	Adenoma	
[ Adenoma TGLS = 6-7 ]			
PRIMARY CAUSE OF DEATH	- Spleen	Leukemia Mononuclear	

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 88034-07

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Date Report Requested: 10/21/2014

Test Type: CHRONIC

Test Compound: Ozone/NNK

Time Report Requested: 05:28:18

Route: SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY

CAS Number: OZONNNKCOMB

First Dose M/F: NA / NA

Species/Strain: Rat/F 344/N

Lab: BNW

ANIMAL ID: 9024

TRT#: 6

SEX: Male

DAY ON TEST: 683

DOSE: 1M/K NNK/OZONE

DISP: Moribund Sacrifice

HISTO: 26452

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

\* Larynx \* Trachea

OBSERVATIONS

Kidney		Nephropathy	Marked
[ Nephropathy TGLS = 10-9 ]			
Liver		Angiectasis	Moderate
[ Leukemia Mononuclear TGLS = 3-10 ]		Leukemia Mononuclear	
* Lung		Leukemia Mononuclear	
[ Leukemia Mononuclear TGLS = 4-3 ]			
Lymph Node	Iliac	Leukemia Mononuclear	
	Pancreatic	Leukemia Mononuclear	
	Renal	Leukemia Mononuclear	
[ Leukemia Mononuclear TGLS = 12-13 ]			
[ Leukemia Mononuclear TGLS = 13-12 ]			
[ Leukemia Mononuclear TGLS = 8-8 ]			
* Lymph Node, Bronchial		Leukemia Mononuclear	
Lymph Node, Mandibular		Leukemia Mononuclear	
[ Leukemia Mononuclear TGLS = 1-11 ]			
* Lymph Node, Mediastinal		Leukemia Mononuclear	
Lymph Node, Mesenteric		Leukemia Mononuclear	
[ Leukemia Mononuclear TGLS = 11-10 ]			
* Nose	Olfactory Epi	Degeneration	Hyaline, Mild
	Goblet Cell, Lateral Wall	Hyperplasia	Minimal
	Lateral Wall	Hyperplasia	Minimal
Parathyroid Gland		Hyperplasia	Moderate
[ Hyperplasia TGLS = 15-9 ]			
Peritoneum		Inflammation	Chronic, Minimal
[ Inflammation TGLS = 14-6 ]			
Pituitary Gland	Pars Distalis	Hyperplasia	Mild

\* PROTOCOL REQUIRED TISSUE



**Experiment Number:** 88034-07

**Test Type:** CHRONIC

**Route:** SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY

**Species/Strain:** Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

**Test Compound:** Ozone/NNK

**CAS Number:** OZONNNKCOMB

**Date Report Requested:** 10/21/2014

**Time Report Requested:** 05:28:18

**First Dose M/F:** NA / NA

**Lab:** BNW

**ANIMAL ID:** 9024

**TRT#:** 6

**SEX:** Male

**DAY ON TEST:** 683

**DOSE:** 1M/K NNK/OZONE

**DISP:** Moribund Sacrifice

**HISTO:** 26452

**ORGAN AND ACCOUNTABLE SITE STATUS**

[ Hyperplasia TGLS = 2-10 ]			
Skin	SOA, Subcut Tiss	Inflammation	Chronic, Minimal
[ Inflammation TGLS = 16-7 ]			
Spleen		Fibrosis Leukemia Mononuclear	Moderate
[ Fibrosis TGLS = 7-11 ]			
[ Leukemia Mononuclear TGLS = 6,9-8 ]			
Thymus		Leukemia Mononuclear	
[ Leukemia Mononuclear TGLS = 5-2 ]			
PRIMARY CAUSE OF DEATH	- Spleen	Leukemia Mononuclear	

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 88034-07

Test Type: CHRONIC

Route: SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY

Species/Strain: Rat/F 344/N

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Test Compound: Ozone/NNK

CAS Number: OZONNNKCOMB

Date Report Requested: 10/21/2014

Time Report Requested: 05:28:18

First Dose M/F: NA / NA

Lab: BNW

ANIMAL ID: 9025

TRT#: 6

SEX: Male

DAY ON TEST: 597

DOSE: 1M/K NNK/OZONE

DISP: Moribund Sacrifice

HISTO: 26453

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

\* Lymph Node, Bronchial

\* Lymph Node, Mediastinal

\* Trachea

OBSERVATIONS

Eye	Ciliary Body, Retina	Cataract Degeneration	Moderate Marked
[ Cataract TGLS = 2-10 ]			
Kidney		Nephropathy	Moderate
[ Nephropathy TGLS = 6-9 ]			
* Larynx		Mineralization	Moderate
Liver		Hepatodiaphragmatic Nodule	
[ Hepatodiaphragmatic Nodule TGLS = 4-8 ]			
* Lung	Interstitial Alveolar Epith Alveolar Epith	Fibrosis Hyperplasia Metaplasia	Minimal Atypical, Mild Minimal
Lymph Node	Renal	Leukemia Mononuclear	
[ Leukemia Mononuclear TGLS = 7-9 ]			
Lymph Node, Mandibular		Leukemia Mononuclear	
[ Leukemia Mononuclear TGLS = 1-8 ]			
* Nose	Olfactory Epi Goblet Cell, Lateral Wall Lateral Wall	Degeneration Hyperplasia Hyperplasia	Hyaline, Mild Minimal Minimal
Peritoneum		Inflammation	Chronic, Minimal
[ Inflammation TGLS = 9-7 ]			
Pituitary Gland	Pars Distalis	Adenoma	
[ Adenoma TGLS = 3-8 ]			
Skin	SOA, Subcut Tiss	Inflammation	Chronic, Minimal
[ Inflammation TGLS = 8-6 ]			
Spleen		Leukemia Mononuclear	
[ Leukemia Mononuclear TGLS = 5-9 ]			

PRIMARY CAUSE OF DEATH

- Pituitary Gland Pars Distalis Adenoma

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 88034-07

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Date Report Requested: 10/21/2014

Test Type: CHRONIC

Test Compound: Ozone/NNK

Time Report Requested: 05:28:18

Route: SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY

CAS Number: OZONNNKCOMB

First Dose M/F: NA / NA

Species/Strain: Rat/F 344/N

Lab: BNW

ANIMAL ID: 9026

TRT#: 6

SEX: Male

DAY ON TEST: 503

DOSE: 1M/K NNK/OZONE

DISP: Natural Death

HISTO: 26454

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

\* Larynx Lymph Node, Mandibular

MISSING

\* Lymph Node, Bronchial

AUTO PRECLUDES DIAG.

\* Nose \* Trachea

OBSERVATIONS

Liver		Leukemia Mononuclear	
[ Leukemia Mononuclear TGLS = 5-9 ]			
* Lung		Hemorrhage	Moderate
Note: Moderate autolysis precludes diagnosis of ozone-induced changes in alveolar ducts and alveolae.			
[ Hemorrhage TGLS = 2-3 ]			
Lym Node Mand			
Note: TGL #1, (Mandibular l.n., dark) is due to post-mortem hypostatic congestion, not a pathologic lesion. Thus NCL was entered for this gross observation.			
* Lymph Node, Mediastinal		Leukemia Mononuclear	
[ Leukemia Mononuclear TGLS = 3-2 ]			
Mesentery	Fat	Necrosis	Moderate
[ Necrosis TGLS = 10-10 ]			
Pituitary Gland	Pars Distalis	Hyperplasia	Mild
[ Hyperplasia TGLS = 9-7 ]			
Skin	SOA, Subcut Tiss	Inflammation	Chronic, Minimal
[ Inflammation TGLS = 11-6 ]			
Spleen		Fibrosis	Mild
		Leukemia Mononuclear	
[ Fibrosis TGLS = 4-12 ]			
[ Leukemia Mononuclear TGLS = 8-11 ]			

PRIMARY CAUSE OF DEATH - Spleen Leukemia Mononuclear

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 88034-07

Test Type: CHRONIC

Route: SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY

Species/Strain: Rat/F 344/N

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Test Compound: Ozone/NNK

CAS Number: OZONNNKCOMB

Date Report Requested: 10/21/2014

Time Report Requested: 05:28:18

First Dose M/F: NA / NA

Lab: BNW

ANIMAL ID: 9027

TRT#: 6

SEX: Male

DAY ON TEST: 736

DOSE: 1M/K NNK/OZONE

DISP: Terminal Sacrifice

HISTO: 26455

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

\* Larynx

\* Lymph Node, Mediastinal

\* Trachea

MISSING

\* Lymph Node, Bronchial

OBSERVATIONS

Kidney [ Nephropathy TGLS = 7-10 ]		Nephropathy	Moderate
Liver [ Leukemia Mononuclear TGLS = 6-11 ]		Degeneration Leukemia Mononuclear	Cystic, Mild
* Lung [ Alveolar/Bronchiolar Carcinoma TGLS = 2-8 ]	Interstitial Alveolar Epith Alveolar Epith	Alveolar/Bronchiolar Adenoma Alveolar/Bronchiolar Carcinoma Fibrosis Hyperplasia Metaplasia	Minimal Atypical, Mild Minimal
Mammary Gland [ Hyperplasia TGLS = 1-9 ]		Hyperplasia	Moderate
* Nose	Olfactory Epi Goblet Cell, Lateral Wall Lateral Wall	Degeneration Hyperplasia Hyperplasia	Hyaline, Mild Minimal Minimal
Peritoneum [ Inflammation TGLS = 8-6 ]		Inflammation	Chronic, Minimal
Pituitary Gland [ Adenoma TGLS = 4-9 ]	Pars Distalis	Adenoma	
Skin [ Inflammation TGLS = 9-7 ]	SOA, Subcut Tiss	Inflammation	Chronic, Minimal
Spleen [ Leukemia Mononuclear TGLS = 5-9 ]		Leukemia Mononuclear	
Testes	Interstit Cell	Adenoma	

\* PROTOCOL REQUIRED TISSUE

**Experiment Number:** 88034-07

**Test Type:** CHRONIC

**Route:** SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY

**Species/Strain:** Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

**Test Compound:** Ozone/NNK

**CAS Number:** OZONNNKCOMB

**Date Report Requested:** 10/21/2014

**Time Report Requested:** 05:28:18

**First Dose M/F:** NA / NA

**Lab:** BNW

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**ANIMAL ID:** 9027

**TRT#:** 6

**SEX:** Male

**DAY ON TEST:** 736

**DOSE:** 1M/K NNK/OZONE

**DISP:** Terminal Sacrifice

**HISTO:** 26455

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**ORGAN AND ACCOUNTABLE SITE STATUS**

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[ Adenoma TGLS = 3-9 ]

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PRIMARY CAUSE OF DEATH

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\* PROTOCOL REQUIRED TISSUE

Experiment Number: 88034-07

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Date Report Requested: 10/21/2014

Test Type: CHRONIC

Test Compound: Ozone/NNK

Time Report Requested: 05:28:18

Route: SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY

CAS Number: OZONNNKCOMB

First Dose M/F: NA / NA

Species/Strain: Rat/F 344/N

Lab: BNW

ANIMAL ID: 9028

TRT#: 6

SEX: Male

DAY ON TEST: 557

DOSE: 1M/K NNK/OZONE

DISP: Natural Death

HISTO: 26456

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

\* Lymph Node, Bronchial

\* Lymph Node, Mediastinal

\* Trachea

OBSERVATIONS

* Larynx		Inflammation	Suppurative, Minimal
Liver		Hepatodiaphragmatic Nodule	
[ Hepatodiaphragmatic Nodule TGLS = 2-8 ]			
* Lung		Alveolar/Bronchiolar Adenoma	
	Interstitial	Fibrosis	Minimal
	Alveolar Epith	Hyperplasia	Atypical, Mild
	Alveolus	Infiltration Cellular	Histiocyte, Minimal
	Alveolar Epith	Metaplasia	Minimal
[ Alveolar/Bronchiolar Adenoma TGLS = 6-9 ]			
* Nose	Olfactory Epi	Degeneration	Hyaline, Moderate
	Goblet Cell, Lateral Wall	Hyperplasia	Minimal
	Lateral Wall	Hyperplasia	Minimal
Peritoneum		Inflammation	Chronic, Minimal
[ Inflammation TGLS = 3-7 ]			
Pituitary Gland	Pars Distalis	Adenoma	
[ Adenoma TGLS = 5-8 ]			
Skin	SOA, Subcut Tiss	Inflammation	Chronic, Minimal
[ Inflammation TGLS = 4-6 ]			

PRIMARY CAUSE OF DEATH - Pituitary Gland Pars Distalis Adenoma

\* PROTOCOL REQUIRED TISSUE



Experiment Number: 88034-07

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Date Report Requested: 10/21/2014

Test Type: CHRONIC

Test Compound: Ozone/NNK

Time Report Requested: 05:28:18

Route: SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY

CAS Number: OZONNNKCOMB

First Dose M/F: NA / NA

Species/Strain: Rat/F 344/N

Lab: BNW

ANIMAL ID: 9029

TRT#: 6

SEX: Male

DAY ON TEST: 736

DOSE: 1M/K NNK/OZONE

DISP: Terminal Sacrifice

HISTO: 26457

ORGAN AND ACCOUNTABLE SITE STATUS

[ Leukemia Mononuclear TGLS = 10-14 ]			
[ Leukemia Mononuclear TGLS = 6-13 ]			
Lymph Node, Mandibular		Leukemia Mononuclear	
[ Leukemia Mononuclear TGLS = 1-9 ]			
* Lymph Node, Mediastinal		Leukemia Mononuclear	
Lymph Node, Mesenteric		Leukemia Mononuclear	
[ Leukemia Mononuclear TGLS = 18-10 ]			
Mesentery	Fat	Necrosis	Mild
[ Necrosis TGLS = 4-8 ]			
* Nose	Olfactory Epi	Degeneration	Hyaline, Mild
	Goblet Cell, Lateral Wall	Hyperplasia	Minimal
	Lateral Wall	Hyperplasia	Minimal
Peritoneum		Inflammation	Chronic, Minimal
[ Inflammation TGLS = 17-6 ]			
Pituitary Gland		Leukemia Mononuclear	
[ Leukemia Mononuclear TGLS = 3-8 ]			
Skin	SOA, Subcut Tiss	Inflammation	Chronic, Minimal
[ Inflammation TGLS = 15-7 ]			
Spleen		Fibrosis	Moderate
		Leukemia Mononuclear	
[ Fibrosis TGLS = 9-8 ]			
[ Leukemia Mononuclear TGLS = 8-8 ]			
Thymus		Leukemia Mononuclear	

PRIMARY CAUSE OF DEATH

-

\* PROTOCOL REQUIRED TISSUE



Experiment Number: 88034-07

Test Type: CHRONIC

Route: SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY

Species/Strain: Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

Test Compound: Ozone/NNK

CAS Number: OZONNNKCOMB

Date Report Requested: 10/21/2014

Time Report Requested: 05:28:18

First Dose M/F: NA / NA

Lab: BNW

ANIMAL ID: 9030

TRT#: 6

SEX: Male

DAY ON TEST: 705

DOSE: 1M/K NNK/OZONE

DISP: Moribund Sacrifice

HISTO: 26458

**ORGAN AND ACCOUNTABLE SITE STATUS**

**NORMAL**

\* Larynx

\* Lymph Node, Mediastinal

\* Trachea

**MISSING**

\* Lymph Node, Bronchial

**OBSERVATIONS**

Liver		Degeneration	Cystic, Mild
[ Degeneration TGLS = 2-8 ]			
* Lung	Interstitial	Fibrosis	Minimal
	Alveolar Epith	Hyperplasia	Atypical, Mild
	Alveolus	Infiltration Cellular	Histiocyte, Mild
	Alveolar Epith	Metaplasia	Minimal
* Nose	Olfactory Epi	Degeneration	Hyaline, Mild
	Lateral Wall	Hyperplasia	Minimal
Skin	SOA, Subcut Tiss	Inflammation	Chronic, Minimal
[ Inflammation TGLS = 3-6 ]			
Tissue NOS	Abdominal	Osteosarcoma	
Note: TGL #1 is a well-differentiated osteosarcoma in the retroperitoneal area near the right kidney. No more precise terminology or site is available for coding.			
[ Osteosarcoma TGLS = 1-7 ]			

PRIMARY CAUSE OF DEATH

- Tissue NOS Abdominal Osteosarcoma

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 88034-07

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Date Report Requested: 10/21/2014

Test Type: CHRONIC

Test Compound: Ozone/NNK

Time Report Requested: 05:28:18

Route: SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY

CAS Number: OZONNNKCOMB

First Dose M/F: NA / NA

Species/Strain: Rat/F 344/N

Lab: BNW

ANIMAL ID: 9031

TRT#: 6

SEX: Male

DAY ON TEST: 635

DOSE: 1M/K NNK/OZONE

DISP: Natural Death

HISTO: 26459

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

\* Trachea

MISSING

\* Lymph Node, Bronchial

OBSERVATIONS

* Larynx		Inflammation	Suppurative, Minimal
Liver		Leukemia Mononuclear	
	[ Leukemia Mononuclear TGLS = 4-9 ]		
* Lung		Alveolar/Bronchiolar Adenoma	Multiple
	Interstitium	Fibrosis	Minimal
	Alveolar Epith	Hyperplasia	Atypical, Mild
	Alveolar Epith	Metaplasia	Minimal
	[ Alveolar/Bronchiolar Adenoma TGLS = 8,9-3 ]		
	[ Hyperplasia TGLS = 10-10 ]		
* Lymph Node, Mediastinal		Leukemia Mononuclear	
	[ Leukemia Mononuclear TGLS = 1-2 ]		
* Nose	Olfactory Epi	Degeneration	Hyaline, Minimal
	Goblet Cell, Lateral Wall	Hyperplasia	Minimal
	Lateral Wall	Hyperplasia	Minimal
		Inflammation	Suppurative, Mild
Pituitary Gland	Pars Distalis	Adenoma	
		Leukemia Mononuclear	
	[ Adenoma TGLS = 2-7 ]		
Skin	SOA, Subcut Tiss	Inflammation	Chronic, Minimal
	[ Inflammation TGLS = 7-6 ]		
Spleen	Capsule	Fibrosis	Minimal
		Leukemia Mononuclear	
	[ Fibrosis TGLS = 6-7 ]		
	[ Leukemia Mononuclear TGLS = 5-7 ]		
Urinary Bladder		Calculus Micro Observation Only	

\* PROTOCOL REQUIRED TISSUE

**Experiment Number:** 88034-07

**Test Type:** CHRONIC

**Route:** SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY

**Species/Strain:** Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

**Test Compound:** Ozone/NNK

**CAS Number:** OZONNNKCOMB

**Date Report Requested:** 10/21/2014

**Time Report Requested:** 05:28:18

**First Dose M/F:** NA / NA

**Lab:** BNW

---

**ANIMAL ID:** 9031

**TRT#:** 6

**SEX:** Male

**DAY ON TEST:** 635

**DOSE:** 1M/K NNK/OZONE

**DISP:** Natural Death

**HISTO:** 26459

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**ORGAN AND ACCOUNTABLE SITE STATUS**

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[ Calculus Micro Observation Only TGLS = 3-8 ]

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**PRIMARY CAUSE OF DEATH**

- Spleen Leukemia Mononuclear

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\* PROTOCOL REQUIRED TISSUE

Experiment Number: 88034-07

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Date Report Requested: 10/21/2014

Test Type: CHRONIC

Test Compound: Ozone/NNK

Time Report Requested: 05:28:18

Route: SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY

CAS Number: OZONNNKCOMB

First Dose M/F: NA / NA

Species/Strain: Rat/F 344/N

Lab: BNW

ANIMAL ID: 9032

TRT#: 6

SEX: Male

DAY ON TEST: 712

DOSE: 1M/K NNK/OZONE

DISP: Moribund Sacrifice

HISTO: 26460

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

\* Larynx \* Trachea

OBSERVATIONS

Kidney		Nephropathy	Marked
[ Nephropathy TGLS = 6-7 ]			
Liver		Degeneration	Cystic, Mild
[ Leukemia Mononuclear TGLS = 5-9 ]		Leukemia Mononuclear	
* Lung	Interstitial	Fibrosis	Minimal
	Alveolar Epith	Hyperplasia	Atypical, Minimal
		Leukemia Mononuclear	
	Alveolar Epith	Metaplasia	Minimal
[ Leukemia Mononuclear TGLS = 1,10-3+8 ]			
Lymph Node	Renal	Leukemia Mononuclear	
[ Leukemia Mononuclear TGLS = 7-9 ]			
* Lymph Node, Bronchial		Leukemia Mononuclear	
* Lymph Node, Mediastinal		Leukemia Mononuclear	
[ Leukemia Mononuclear TGLS = 9-2 ]			
* Nose	Olfactory Epi	Degeneration	Hyaline, Mild
	Goblet Cell, Lateral Wall	Hyperplasia	Minimal
	Lateral Wall	Hyperplasia	Minimal
Pituitary Gland	Pars Distalis	Adenoma	
[ Adenoma TGLS = 2-8 ]			
Skin	SOA, Subcut Tiss	Inflammation	Chronic, Minimal
[ Inflammation TGLS = 8-6 ]			
Spleen		Fibrosis	Moderate
		Leukemia Mononuclear	
[ Fibrosis TGLS = 4-8 ]			
[ Leukemia Mononuclear TGLS = 3-8 ]			

PRIMARY CAUSE OF DEATH - Spleen Leukemia Mononuclear

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 88034-07

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Date Report Requested: 10/21/2014

Test Type: CHRONIC

Test Compound: Ozone/NNK

Time Report Requested: 05:28:18

Route: SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY

CAS Number: OZONNNKCOMB

First Dose M/F: NA / NA

Species/Strain: Rat/F 344/N

Lab: BNW

ANIMAL ID: 9033

TRT#: 6

SEX: Male

DAY ON TEST: 736

DOSE: 1M/K NNK/OZONE

DISP: Terminal Sacrifice

HISTO: 26461

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

\* Larynx

\* Lymph Node, Mediastinal

\* Trachea

MISSING

\* Lymph Node, Bronchial

OBSERVATIONS

Kidney		Cyst	Mild
		Nephropathy	Moderate
[ Cyst TGLS = 6-11 ]			
[ Nephropathy TGLS = 5-11 ]			
Liver		Degeneration	Cystic, Mild
[ Degeneration TGLS = 9-10 ]			
* Lung	Interstitial	Alveolar/Bronchiolar Adenoma	
	Alveolar Epith	Fibrosis	Minimal
	Alveolar Epith	Hyperplasia	Atypical, Mild
	Fat	Metaplasia	Minimal
Mesentery		Necrosis	Moderate
[ Necrosis TGLS = 3-8 ]			
* Nose	Olfactory Epi	Degeneration	Hyaline, Mild
	Goblet Cell, Lateral Wall	Hyperplasia	Mild
	Lateral Wall	Hyperplasia	Minimal
Peritoneum		Inflammation	Chronic, Minimal
[ Inflammation TGLS = 7-6 ]			
Skin	SOA, Subcut Tiss	Inflammation	Chronic, Minimal
[ Inflammation TGLS = 8-7 ]			
Spleen		Fibrosis	Mild
		Leukemia Mononuclear	
[ Leukemia Mononuclear TGLS = 4-10 ]			
Testes	Interstit Cell	Adenoma	
[ Adenoma TGLS = 1,2-9 ]			

PRIMARY CAUSE OF DEATH

-

\* PROTOCOL REQUIRED TISSUE



Experiment Number: 88034-07

Test Type: CHRONIC

Route: SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY

Species/Strain: Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

Test Compound: Ozone/NNK

CAS Number: OZONNNKCOMB

Date Report Requested: 10/21/2014

Time Report Requested: 05:28:18

First Dose M/F: NA / NA

Lab: BNW

ANIMAL ID: 9035

TRT#: 6

SEX: Male

DAY ON TEST: 602

DOSE: 1M/K NNK/OZONE

DISP: Moribund Sacrifice

HISTO: 26463

**ORGAN AND ACCOUNTABLE SITE STATUS**

**NORMAL**

Eye

\* Larynx

\* Lymph Node, Mediastinal

\* Trachea

**MISSING**

\* Lymph Node, Bronchial

**OBSERVATIONS**

Eye

Note: No histologic lesion corresponding to TGL #6 (Eye, bilateral, pallor) was observed. Therefore NCL was entered for TGL #6 on IANR form.

Kidney

Nephropathy

Moderate

[ Nephropathy TGLS = 4-7 ]

Liver

Hyperplasia

Focal, Moderate

Vacuolization Cytoplasmic

Mild

[ Vacuolization Cytoplasmic TGLS = 3-7 ]

\* Lung

Interstitium

Fibrosis

Minimal

Alveolar Epith

Metaplasia

Minimal

Note: No microscopic lesion corresponding to TGL #1 (lung, bilateral, mottled, pale) was observed. Gross color change probably due to incomplete blood drainage.

\* Nose

Olfactory Epi

Degeneration

Hyaline, Mild

Goblet Cell, Lateral Wall

Hyperplasia

Minimal

Lateral Wall

Hyperplasia

Minimal

Pituitary Gland

Pars Distalis

Adenoma

[ Adenoma TGLS = 2-7 ]

Skin

SOA, Subcut Tiss

Inflammation

Chronic, Minimal

[ Inflammation TGLS = 5-6 ]

PRIMARY CAUSE OF DEATH

- Pituitary Gland Pars Distalis Adenoma

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 88034-07

Test Type: CHRONIC

Route: SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY

Species/Strain: Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

Test Compound: Ozone/NNK

CAS Number: OZONNNKCOMB

Date Report Requested: 10/21/2014

Time Report Requested: 05:28:18

First Dose M/F: NA / NA

Lab: BNW

ANIMAL ID: 9036

TRT#: 6

SEX: Male

DAY ON TEST: 585

DOSE: 1M/K NNK/OZONE

DISP: Natural Death

HISTO: 26464

**ORGAN AND ACCOUNTABLE SITE STATUS**

**NORMAL**

\* Larynx

\* Lymph Node, Mediastinal

\* Trachea

**MISSING**

\* Lymph Node, Bronchial

**OBSERVATIONS**

\* Lung

Interstitial

Alveolar/Bronchiolar Adenoma

Multiple

Fibrosis

Minimal

Alveolar Epith

Hyperplasia

Atypical, Mild

Alveolar Epith

Metaplasia

Minimal

Note: No microscopic lesion corresponding to TGL #3 (lung, bilateral, mottled, pale/red) was observed. Color change probably due to blood pooling (natural death).

\* Nose

Olfactory Epi

Degeneration

Hyaline, Mild

Goblet Cell, Lateral Wall

Hyperplasia

Minimal

Lateral Wall

Hyperplasia

Minimal

Pituitary Gland

Pars Distalis

Hemorrhage

Marked

[ Hemorrhage TGLS = 6-7 ]

Skin

SOA, Subcut Tiss

Inflammation

Chronic, Minimal

[ Inflammation TGLS = 5-6 ]

Spleen

Leukemia Mononuclear

[ Leukemia Mononuclear TGLS = 4-7 ]

PRIMARY CAUSE OF DEATH

-

\* PROTOCOL REQUIRED TISSUE



Experiment Number: 88034-07

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Date Report Requested: 10/21/2014

Test Type: CHRONIC

Test Compound: Ozone/NNK

Time Report Requested: 05:28:18

Route: SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY

CAS Number: OZONNNKCOMB

First Dose M/F: NA / NA

Species/Strain: Rat/F 344/N

Lab: BNW

ANIMAL ID: 9037

TRT#: 6

SEX: Male

DAY ON TEST: 669

DOSE: 1M/K NNK/OZONE

DISP: Moribund Sacrifice

HISTO: 24465

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

\* Larynx \* Trachea

MISSING

\* Lymph Node, Bronchial

OBSERVATIONS

Liver		Degeneration Leukemia Mononuclear	Cystic, Mild
[ Degeneration TGLS = 2-9 ]			
[ Leukemia Mononuclear TGLS = 1-9 ]			
* Lung		Alveolar/Bronchiolar Adenoma Alveolar/Bronchiolar Carcinoma	
	Interstitial	Fibrosis	Minimal
	Alveolar Epith	Hyperplasia	Atypical, Mild
		Leukemia Mononuclear	
	Alveolar Epith	Metaplasia	Minimal
[ Alveolar/Bronchiolar Carcinoma TGLS = 8-8 ]			
[ Hyperplasia TGLS = 9,10-8 ]			
Lymph Node	Pancreatic	Leukemia Mononuclear	
[ Leukemia Mononuclear TGLS = 3-10 ]			
* Lymph Node, Mediastinal		Leukemia Mononuclear	
* Nose	Olfactory Epi	Degeneration	Hyaline, Minimal
	Goblet Cell, Lateral Wall	Hyperplasia	Minimal
	Lateral Wall	Hyperplasia	Minimal
Peritoneum		Inflammation	Chronic, Minimal
[ Inflammation TGLS = 6-7 ]			
Skin	SOA, Subcut Tiss	Inflammation	Chronic, Minimal
[ Inflammation TGLS = 7-6 ]			
Spleen		Leukemia Mononuclear	
[ Leukemia Mononuclear TGLS = 4-10 ]			
Testes	Interstit Cell	Adenoma	

\* PROTOCOL REQUIRED TISSUE

**Experiment Number:** 88034-07

**Test Type:** CHRONIC

**Route:** SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY

**Species/Strain:** Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

**Test Compound:** Ozone/NNK

**CAS Number:** OZONNNKCOMB

**Date Report Requested:** 10/21/2014

**Time Report Requested:** 05:28:18

**First Dose M/F:** NA / NA

**Lab:** BNW

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**ANIMAL ID:** 9037

**TRT#:** 6

**SEX:** Male

**DAY ON TEST:** 669

**DOSE:** 1M/K NNK/OZONE

**DISP:** Moribund Sacrifice

**HISTO:** 24465

---

**ORGAN AND ACCOUNTABLE SITE STATUS**

---

[ Adenoma TGLS = 5-9 ]

---

**PRIMARY CAUSE OF DEATH**

- Spleen Leukemia Mononuclear

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\* PROTOCOL REQUIRED TISSUE



Experiment Number: 88034-07

Test Type: CHRONIC

Route: SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY

Species/Strain: Rat/F 344/N

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Test Compound: Ozone/NNK

CAS Number: OZONNNKCOMB

Date Report Requested: 10/21/2014

Time Report Requested: 05:28:18

First Dose M/F: NA / NA

Lab: BNW

ANIMAL ID: 9039

TRT#: 6

SEX: Male

DAY ON TEST: 671

DOSE: 1M/K NNK/OZONE

DISP: Moribund Sacrifice

HISTO: 26467

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

Intestine Large, Cecum

\* Trachea

OBSERVATIONS

Int Lg Cecum

Note: No microscopic lesion corresponding to TGL #10 (cecum nodule, 3mm x 4mm dia., dark) was observed in original section or recut.

Kidney

Nephropathy

Moderate

[ Nephropathy TGLS = 8-10 ]

\* Larynx

Inflammation

Suppurative, Minimal

Liver

Hyperplasia

Moderate

Leukemia Mononuclear

Necrosis

Focal, Moderate

[ Hyperplasia TGLS = 7-9 ]

\* Lung

Interstitialium

Fibrosis

Minimal

Leukemia Mononuclear

Alveolar Epith

Metaplasia

Minimal

\* Lymph Node, Bronchial

Leukemia Mononuclear

\* Lymph Node, Mediastinal

Leukemia Mononuclear

[ Leukemia Mononuclear TGLS = 1-2 ]

\* Nose

Olfactory Epi

Degeneration

Hyaline, Minimal

Goblet Cell, Lateral Wall

Hyperplasia

Minimal

Lateral Wall

Hyperplasia

Minimal

Inflammation

Chronic, Minimal

Peritoneum

[ Inflammation TGLS = 6-7 ]

Skin

SOA, Subcut Tiss

Inflammation

Chronic, Minimal

[ Inflammation TGLS = 9-6 ]

Spleen

Fibrosis

Mild

Leukemia Mononuclear

[ Fibrosis TGLS = 5-9 ]

[ Leukemia Mononuclear TGLS = 4-9 ]

Stomach, Forestomach

Hyperplasia

Squamous, Mild

\* PROTOCOL REQUIRED TISSUE

**Experiment Number:** 88034-07

**Test Type:** CHRONIC

**Route:** SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY

**Species/Strain:** Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

**Test Compound:** Ozone/NNK

**CAS Number:** OZONNNKCOMB

**Date Report Requested:** 10/21/2014

**Time Report Requested:** 05:28:18

**First Dose M/F:** NA / NA

**Lab:** BNW

---

**ANIMAL ID:** 9039

**TRT#:** 6

**SEX:** Male

**DAY ON TEST:** 671

**DOSE:** 1M/K NNK/OZONE

**DISP:** Moribund Sacrifice

**HISTO:** 26467

---

**ORGAN AND ACCOUNTABLE SITE STATUS**

---

[ Hyperplasia TGLS = 11-9 ]

Testes

Interstit Cell

Adenoma

Atrophy

Moderate

[ Adenoma TGLS = 2-8 ]

[ Atrophy TGLS = 3-8 ]

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**PRIMARY CAUSE OF DEATH**

- Kidney Nephropathy

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\* PROTOCOL REQUIRED TISSUE

Experiment Number: 88034-07

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Date Report Requested: 10/21/2014

Test Type: CHRONIC

Test Compound: Ozone/NNK

Time Report Requested: 05:28:18

Route: SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY

CAS Number: OZONNNKCOMB

First Dose M/F: NA / NA

Species/Strain: Rat/F 344/N

Lab: BNW

ANIMAL ID: 9040

TRT#: 6

SEX: Male

DAY ON TEST: 613

DOSE: 1M/K NNK/OZONE

DISP: Moribund Sacrifice

HISTO: 26468

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

\* Larynx \* Trachea

OBSERVATIONS

Intestine Small, Ileum		Leukemia Mononuclear	
[ Leukemia Mononuclear TGLS = 11-15 ]			
Kidney		Leukemia Mononuclear	
[ Leukemia Mononuclear TGLS = 6-11 ]		Nephropathy	Moderate
* Lung	Interstitial	Fibrosis	Minimal
	Alveolar Epith	Leukemia Mononuclear	
[ Leukemia Mononuclear TGLS = 3-3 ]		Metaplasia	Minimal
Lymph Node	Deep Cervical	Leukemia Mononuclear	
[ Leukemia Mononuclear TGLS = 4-8 ]	Renal	Leukemia Mononuclear	
[ Leukemia Mononuclear TGLS = 7-9 ]			
* Lymph Node, Bronchial		Leukemia Mononuclear	
Lymph Node, Mandibular		Leukemia Mononuclear	
[ Leukemia Mononuclear TGLS = 1-10 ]			
* Lymph Node, Mediastinal		Leukemia Mononuclear	
[ Leukemia Mononuclear TGLS = 2-2 ]			
Lymph Node, Mesenteric		Leukemia Mononuclear	
[ Leukemia Mononuclear TGLS = 10-13+14 ]			
* Nose	Olfactory Epi	Degeneration	Hyaline, Moderate
	Goblet Cell, Lateral Wall	Hyperplasia	Minimal
	Lateral Wall	Hyperplasia	Minimal
		Leukemia Mononuclear	
Peritoneum		Inflammation	Chronic, Minimal
[ Inflammation TGLS = 8-6 ]			
Skin	SOA, Subcut Tiss	Inflammation	Chronic, Minimal

\* PROTOCOL REQUIRED TISSUE

**Experiment Number:** 88034-07

**Test Type:** CHRONIC

**Route:** SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY

**Species/Strain:** Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

**Test Compound:** Ozone/NNK

**CAS Number:** OZONNNKCOMB

**Date Report Requested:** 10/21/2014

**Time Report Requested:** 05:28:18

**First Dose M/F:** NA / NA

**Lab:** BNW

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**ANIMAL ID:** 9040

**TRT#:** 6

**SEX:** Male

**DAY ON TEST:** 613

**DOSE:** 1M/K NNK/OZONE

**DISP:** Moribund Sacrifice

**HISTO:** 26468

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**ORGAN AND ACCOUNTABLE SITE STATUS**

[ Inflammation TGLS = 9-7 ]

Spleen

Leukemia Mononuclear

[ Leukemia Mononuclear TGLS = 5-12 ]

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**PRIMARY CAUSE OF DEATH**

- Spleen Leukemia Mononuclear

\* PROTOCOL REQUIRED TISSUE





**Experiment Number:** 88034-07

**Test Type:** CHRONIC

**Route:** SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY

**Species/Strain:** Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

**Test Compound:** Ozone/NNK

**CAS Number:** OZONNNKCOMB

**Date Report Requested:** 10/21/2014

**Time Report Requested:** 05:28:18

**First Dose M/F:** NA / NA

**Lab:** BNW

**ANIMAL ID:** 9041

**TRT#:** 6

**SEX:** Male

**DAY ON TEST:** 582

**DOSE:** 1M/K NNK/OZONE

**DISP:** Moribund Sacrifice

**HISTO:** 26469

**ORGAN AND ACCOUNTABLE SITE STATUS**

Lymph Node, Mandibular [ Leukemia Mononuclear TGLS = 2-8 ]		Leukemia Mononuclear	
* Lymph Node, Mediastinal [ Leukemia Mononuclear TGLS = 4-2+10 ]		Leukemia Mononuclear	
Lymph Node, Mesenteric [ Leukemia Mononuclear TGLS = 21-16 ]		Leukemia Mononuclear	
* Nose	Olfactory Epi Goblet Cell, Lateral Wall Lateral Wall	Degeneration Hyperplasia Hyperplasia Edema	Hyaline, Mild Minimal Minimal Minimal
Penis [ Edema TGLS = 3-17 ]			
Pituitary Gland [ Leukemia Mononuclear TGLS = 12-10 ]		Leukemia Mononuclear	
Skin [ Inflammation TGLS = 20-6 ]	SOA, Subcut Tiss	Inflammation	Chronic, Minimal
Spleen [ Leukemia Mononuclear TGLS = 10-8 ]		Leukemia Mononuclear	

**PRIMARY CAUSE OF DEATH** - Spleen Leukemia Mononuclear

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 88034-07

Test Type: CHRONIC

Route: SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY

Species/Strain: Rat/F 344/N

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Test Compound: Ozone/NNK

CAS Number: OZONNNKCOMB

Date Report Requested: 10/21/2014

Time Report Requested: 05:28:18

First Dose M/F: NA / NA

Lab: BNW

ANIMAL ID: 9042

TRT#: 6

SEX: Male

DAY ON TEST: 635

DOSE: 1M/K NNK/OZONE

DISP: Moribund Sacrifice

HISTO: 26470

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

\* Larynx \* Trachea

OBSERVATIONS

Liver		Angiectasis	Moderate
		Leukemia Mononuclear	
[ Leukemia Mononuclear TGLS = 4,5-11 ]			
* Lung	Interstitial	Fibrosis	Minimal
		Hemorrhage	Minimal
	Alveolar Epith	Hyperplasia	Atypical, Mild
	Alveolar Epith	Metaplasia	Minimal
[ Hemorrhage TGLS = 1-3 ]			
[ Hyperplasia TGLS = 2,12-3 ]			
Lymph Node	Pancreatic	Leukemia Mononuclear	
	Renal	Leukemia Mononuclear	
[ Leukemia Mononuclear TGLS = 8-9 ]			
[ Leukemia Mononuclear TGLS = 6-8 ]			
* Lymph Node, Bronchial		Leukemia Mononuclear	
* Lymph Node, Mediastinal		Leukemia Mononuclear	
* Nose	Olfactory Epi	Degeneration	Hyaline, Mild
	Goblet Cell, Lateral Wall	Hyperplasia	Minimal
	Lateral Wall	Hyperplasia	Minimal
		Inflammation	Chronic, Minimal
Peritoneum			
[ Inflammation TGLS = 9-6 ]			
Pituitary Gland	Pars Distalis	Adenoma	
[ Adenoma TGLS = 3-11 ]			
Skin	SOA, Subcut Tiss	Inflammation	Chronic, Minimal
[ Inflammation TGLS = 10-7 ]			
Spleen		Leukemia Mononuclear	
[ Leukemia Mononuclear TGLS = 7-10 ]			
Stomach, Forestomach		Hyperplasia	Squamous, Mild

\* PROTOCOL REQUIRED TISSUE

**Experiment Number:** 88034-07

**Test Type:** CHRONIC

**Route:** SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY

**Species/Strain:** Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

**Test Compound:** Ozone/NNK

**CAS Number:** OZONNNKCOMB

**Date Report Requested:** 10/21/2014

**Time Report Requested:** 05:28:19

**First Dose M/F:** NA / NA

**Lab:** BNW

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**ANIMAL ID:** 9042

**TRT#:** 6

**SEX:** Male

**DAY ON TEST:** 635

**DOSE:** 1M/K NNK/OZONE

**DISP:** Moribund Sacrifice

**HISTO:** 26470

---

**ORGAN AND ACCOUNTABLE SITE STATUS**

[ Inflammation TGLS = 11-10 ]

Inflammation

Chronic Active, Moderate

---

**PRIMARY CAUSE OF DEATH**

- Spleen Leukemia Mononuclear

---

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 88034-07

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Date Report Requested: 10/21/2014

Test Type: CHRONIC

Test Compound: Ozone/NNK

Time Report Requested: 05:28:19

Route: SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY

CAS Number: OZONNNKCOMB

First Dose M/F: NA / NA

Species/Strain: Rat/F 344/N

Lab: BNW

ANIMAL ID: 9043

TRT#: 6

SEX: Male

DAY ON TEST: 687

DOSE: 1M/K NNK/OZONE

DISP: Moribund Sacrifice

HISTO: 26471

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

\* Larynx

\* Lymph Node, Mediastinal

\* Trachea

MISSING

\* Lymph Node, Bronchial

OBSERVATIONS

Kidney		Nephropathy	Moderate
Note: TGL #7 (Kidney, R. cortex, cyst, 2mm x 3mm, pale) is located in retroperitoneal fat rather than renal cortex. Lesion coded under peritoneum. [ Nephropathy TGLS = 6-10 ]			
Liver		Angiectasis Degeneration Leukemia Mononuclear	Mild Cystic, Moderate
[ Angiectasis TGLS = 3-9 ] [ Degeneration TGLS = 4-9 ]			
* Lung	Interstitial Alveolar Epith Alveolar Epith	Fibrosis Hyperplasia Metaplasia	Minimal Atypical, Minimal Minimal
Lymph Node	Iliac Renal Renal Iliac	Infiltration Cellular Infiltration Cellular Inflammation Pigmentation	Plasma Cell, Moderate Plasma Cell, Mild Granulomatous, Moderate Mild
Note: The pigment observed in iliac node is tattoo ink. [ Infiltration Cellular TGLS = 9-11 ] [ Inflammation TGLS = 8-9 ]			
Mammary Gland		Galactocele	Moderate
[ Galactocele TGLS = 11-11 ]			
* Nose	Olfactory Epi Goblet Cell, Lateral Wall Lateral Wall	Degeneration Hyperplasia Hyperplasia	Hyaline, Minimal Minimal Minimal
Peritoneum		Inflammation	Chronic, Minimal
[ Inflammation TGLS = 7,10-10+7 ]			

\* PROTOCOL REQUIRED TISSUE

**Experiment Number:** 88034-07

**Test Type:** CHRONIC

**Route:** SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY

**Species/Strain:** Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

**Test Compound:** Ozone/NNK

**CAS Number:** OZONNNKCOMB

**Date Report Requested:** 10/21/2014

**Time Report Requested:** 05:28:19

**First Dose M/F:** NA / NA

**Lab:** BNW

**ANIMAL ID:** 9043

**TRT#:** 6

**SEX:** Male

**DAY ON TEST:** 687

**DOSE:** 1M/K NNK/OZONE

**DISP:** Moribund Sacrifice

**HISTO:** 26471

**ORGAN AND ACCOUNTABLE SITE STATUS**

Pituitary Gland [ Adenoma TGLS = 1-8 ]	Pars Distalis	Adenoma	
Skin [ Inflammation TGLS = 12-6 ]	SOA, Subcut Tiss	Inflammation	Chronic, Minimal
Spleen [ Leukemia Mononuclear TGLS = 5-8 ]		Leukemia Mononuclear	
Testes [ Adenoma TGLS = 2-8 ]	Interstit Cell	Adenoma	
Thyroid Gland [ Adenoma TGLS = 13-8 ]	C Cell	Adenoma	
PRIMARY CAUSE OF DEATH	- Pituitary Gland Pars Distalis Adenoma		

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 88034-07

Test Type: CHRONIC

Route: SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY

Species/Strain: Rat/F 344/N

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Test Compound: Ozone/NNK

CAS Number: OZONNNKCOMB

Date Report Requested: 10/21/2014

Time Report Requested: 05:28:19

First Dose M/F: NA / NA

Lab: BNW

ANIMAL ID: 9044

TRT#: 6

SEX: Male

DAY ON TEST: 700

DOSE: 1M/K NNK/OZONE

DISP: Moribund Sacrifice

HISTO: 26472

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

\* Lymph Node, Bronchial

\* Lymph Node, Mediastinal

\* Trachea

OBSERVATIONS

Kidney [ Nephropathy TGLS = 6-8 ]		Nephropathy	Moderate
* Larynx Liver		Inflammation Angiectasis Degeneration Leukemia Mononuclear	Suppurative, Minimal Moderate Cystic, Mild
[ Angiectasis TGLS = 5-8 ]			
* Lung	Interstitial Alveolar Epith Alveolar Epith	Alveolar/Bronchiolar Adenoma Fibrosis Hyperplasia Metaplasia Hyperplasia	Minimal Atypical, Mild Minimal Lymphoid, Mild
Lymph Node, Mandibular [ Hyperplasia TGLS = 3-7 ]			
* Nose	Olfactory Epi Goblet Cell, Lateral Wall Lateral Wall	Degeneration Hyperplasia Hyperplasia Inflammation	Hyaline, Mild Minimal Minimal Chronic, Minimal
Peritoneum [ Inflammation TGLS = 9-7 ]			
Skin [ Inflammation TGLS = 10-6 ] [ Inflammation TGLS = 1-7 ]	SOA, Subcut Tiss	Inflammation Inflammation	Chronic, Minimal Chronic, Mild
Spleen [ Fibrosis TGLS = 7-8 ]		Fibrosis Leukemia Mononuclear	Moderate
Testes [ Adenoma TGLS = 8-10 ]	Interstit Cell	Adenoma	

\* PROTOCOL REQUIRED TISSUE

**Experiment Number:** 88034-07

**Test Type:** CHRONIC

**Route:** SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY

**Species/Strain:** Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

**Test Compound:** Ozone/NNK

**CAS Number:** OZONNNKCOMB

**Date Report Requested:** 10/21/2014

**Time Report Requested:** 05:28:19

**First Dose M/F:** NA / NA

**Lab:** BNW

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**ANIMAL ID:** 9044

**TRT#:** 6

**SEX:** Male

**DAY ON TEST:** 700

**DOSE:** 1M/K NNK/OZONE

**DISP:** Moribund Sacrifice

**HISTO:** 26472

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**ORGAN AND ACCOUNTABLE SITE STATUS**

Zymbal's Gland

Carcinoma

[ Carcinoma TGLS = 4-9 ]

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**PRIMARY CAUSE OF DEATH**

- Zymbal's Gland Carcinoma

---

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 88034-07

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Date Report Requested: 10/21/2014

Test Type: CHRONIC

Test Compound: Ozone/NNK

Time Report Requested: 05:28:19

Route: SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY

CAS Number: OZONNNKCOMB

First Dose M/F: NA / NA

Species/Strain: Rat/F 344/N

Lab: BNW

ANIMAL ID: 9045

TRT#: 6

SEX: Male

DAY ON TEST: 581

DOSE: 1M/K NNK/OZONE

DISP: Moribund Sacrifice

HISTO: 26473

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

\* Larynx \* Trachea

MISSING

\* Lymph Node, Bronchial

OBSERVATIONS

Eye		Hemorrhage	Mild
[ Hemorrhage TGLS = 3,4-7 ]			
Kidney		Nephropathy	Moderate
[ Nephropathy TGLS = 11-9 ]			
Liver		Leukemia Mononuclear	
[ Leukemia Mononuclear TGLS = 5,6-7 ]			
* Lung	Interstitial	Fibrosis	Minimal
	Alveolar Epith	Leukemia Mononuclear	
[ Leukemia Mononuclear TGLS = 2-3 ]		Metaplasia	Minimal
Lymph Node	Pancreatic	Leukemia Mononuclear	
[ Leukemia Mononuclear TGLS = 10-8 ]			
Lymph Node, Mandibular		Leukemia Mononuclear	
[ Leukemia Mononuclear TGLS = 1-7 ]			
* Lymph Node, Mediastinal		Leukemia Mononuclear	
* Nose	Olfactory Epi	Degeneration	Hyaline, Mild
	Goblet Cell, Lateral Wall	Hyperplasia	Minimal
	Lateral Wall	Hyperplasia	Minimal
Skin	SOA, Subcut Tiss	Inflammation	Chronic, Minimal
[ Inflammation TGLS = 12-6 ]			
Spleen		Fibrosis	Moderate
		Leukemia Mononuclear	
[ Fibrosis TGLS = 9-9 ]			
[ Leukemia Mononuclear TGLS = 7,8-8 ]			

PRIMARY CAUSE OF DEATH - Spleen Leukemia Mononuclear

\* PROTOCOL REQUIRED TISSUE



Experiment Number: 88034-07

Test Type: CHRONIC

Route: SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY

Species/Strain: Rat/F 344/N

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Test Compound: Ozone/NNK

CAS Number: OZONNNKCOMB

Date Report Requested: 10/21/2014

Time Report Requested: 05:28:19

First Dose M/F: NA / NA

Lab: BNW

ANIMAL ID: 9046

TRT#: 6

SEX: Male

DAY ON TEST: 678

DOSE: 1M/K NNK/OZONE

DISP: Moribund Sacrifice

HISTO: 26474

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

\* Larynx \* Trachea

OBSERVATIONS

Eye		Cataract	Mild
	Ciliary Body, Retina	Degeneration	Moderate
[ Degeneration TGLS = 1-7 ]			
Kidney		Leukemia Mononuclear	
		Nephropathy	Mild
[ Leukemia Mononuclear TGLS = 11-10 ]			
Liver		Leukemia Mononuclear	
[ Leukemia Mononuclear TGLS = 7-9 ]			
* Lung		Alveolar/Bronchiolar Adenoma	Multiple
	Interstitial	Fibrosis	Minimal
	Alveolar Epith	Hyperplasia	Atypical, Moderate
	Alveolus	Infiltration Cellular	Histiocyte, Mild
		Leukemia Mononuclear	
	Alveolar Epith	Metaplasia	Minimal
[ Alveolar/Bronchiolar Adenoma TGLS = 3,14-3 ]			
Lymph Node	Renal	Leukemia Mononuclear	
[ Leukemia Mononuclear TGLS = 10-11 ]			
* Lymph Node, Bronchial		Leukemia Mononuclear	
Lymph Node, Mandibular		Leukemia Mononuclear	
[ Leukemia Mononuclear TGLS = 2-7 ]			
* Lymph Node, Mediastinal		Leukemia Mononuclear	
Lymph Node, Mesenteric		Leukemia Mononuclear	
[ Leukemia Mononuclear TGLS = 13-9 ]			
Mesentery	Fat	Necrosis	Mild
[ Necrosis TGLS = 5-8 ]			
* Nose	Olfactory Epi	Degeneration	Hyaline, Mild
	Goblet Cell, Lateral Wall	Hyperplasia	Minimal

\* PROTOCOL REQUIRED TISSUE

**Experiment Number:** 88034-07

**Test Type:** CHRONIC

**Route:** SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY

**Species/Strain:** Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

**Test Compound:** Ozone/NNK

**CAS Number:** OZONNNKCOMB

**Date Report Requested:** 10/21/2014

**Time Report Requested:** 05:28:19

**First Dose M/F:** NA / NA

**Lab:** BNW

**ANIMAL ID:** 9046

**TRT#:** 6

**SEX:** Male

**DAY ON TEST:** 678

**DOSE:** 1M/K NNK/OZONE

**DISP:** Moribund Sacrifice

**HISTO:** 26474

**ORGAN AND ACCOUNTABLE SITE STATUS**

Pituitary Gland	Lateral Wall Pars Distalis	Hyperplasia Adenoma Leukemia Mononuclear	Minimal
[ Adenoma TGLS = 4-7 ]			
Skin	SOA, Subcut Tiss	Inflammation	Chronic, Minimal
[ Inflammation TGLS = 12-6 ]			
Spleen		Leukemia Mononuclear	
[ Leukemia Mononuclear TGLS = 6-8 ]			
Testes	Interstit Cell	Adenoma	
[ Adenoma TGLS = 8,9-11 ]			
PRIMARY CAUSE OF DEATH	- Spleen	Leukemia Mononuclear	

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 88034-07

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Date Report Requested: 10/21/2014

Test Type: CHRONIC

Test Compound: Ozone/NNK

Time Report Requested: 05:28:19

Route: SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY

CAS Number: OZONNNKCOMB

First Dose M/F: NA / NA

Species/Strain: Rat/F 344/N

Lab: BNW

ANIMAL ID: 9047

TRT#: 6

SEX: Male

DAY ON TEST: 403

DOSE: 1M/K NNK/OZONE

DISP: Moribund Sacrifice

HISTO: 26475

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

\* Larynx \* Trachea

OBSERVATIONS

Liver		Leukemia Mononuclear	
[ Leukemia Mononuclear TGLS = 3,4-11 ]			
* Lung	Interstitial	Fibrosis	Minimal
	Alveolar Epith	Leukemia Mononuclear	
[ Leukemia Mononuclear TGLS = 2-3 ]		Metaplasia	Minimal
Lymph Node	Iliac	Leukemia Mononuclear	
	Pancreatic	Leukemia Mononuclear	
	Renal	Leukemia Mononuclear	
[ Leukemia Mononuclear TGLS = 7-7 ]			
[ Leukemia Mononuclear TGLS = 8-8 ]			
[ Leukemia Mononuclear TGLS = 5-10 ]			
* Lymph Node, Bronchial		Leukemia Mononuclear	
* Lymph Node, Mediastinal		Leukemia Mononuclear	
[ Leukemia Mononuclear TGLS = 11-2 ]			
Lymph Node, Mesenteric		Leukemia Mononuclear	
[ Leukemia Mononuclear TGLS = 9-9 ]			
* Nose	Olfactory Epi	Degeneration	Hyaline, Minimal
	Goblet Cell, Lateral Wall	Hyperplasia	Minimal
	Lateral Wall	Hyperplasia	Minimal
Preputial Gland		Inflammation	Chronic Active, Moderate
[ Inflammation TGLS = 1-12 ]			
Skin	SOA, Subcut Tiss	Inflammation	Chronic, Minimal
[ Inflammation TGLS = 10-6 ]			
Spleen		Leukemia Mononuclear	
[ Leukemia Mononuclear TGLS = 6-11 ]			

PRIMARY CAUSE OF DEATH - Spleen Leukemia Mononuclear

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 88034-07

Test Type: CHRONIC

Route: SUBCUTANEOUS|RESPIRATORY  
EXPOSURE WHOLE BODY

Species/Strain: Rat/F 344/N

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Test Compound: Ozone/NNK

CAS Number: OZONNNKCOMB

Date Report Requested: 10/21/2014

Time Report Requested: 05:28:19

First Dose M/F: NA / NA

Lab: BNW

ANIMAL ID: 9048

TRT#: 6

SEX: Male

DAY ON TEST: 704

DOSE: 1M/K NNK/OZONE

DISP: Moribund Sacrifice

HISTO: 26476

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

\* Larynx

\* Lymph Node, Bronchial

\* Lymph Node, Mediastinal

\* Trachea

OBSERVATIONS

Kidney [ Nephropathy TGLS = 2-8 ]		Nephropathy	Moderate
Liver [ Leukemia Mononuclear TGLS = 1-8 ]		Leukemia Mononuclear	
* Lung	Interstitial Alveolar Epith Alveolus Alveolar Epith	Alveolar/Bronchiolar Adenoma Fibrosis Hyperplasia Infiltration Cellular Metaplasia	Minimal Atypical, Mild Histiocyte, Mild Minimal
* Nose	Olfactory Epi Goblet Cell, Lateral Wall Lateral Wall	Degeneration Hyperplasia Hyperplasia	Hyaline, Mild Minimal Minimal
Peritoneum [ Inflammation TGLS = 7-7 ]		Inflammation	Chronic, Minimal
Skin [ Fibroma TGLS = 6-9 ] [ Inflammation TGLS = 8-6 ]	Subcut Tiss SOA, Subcut Tiss	Fibroma Inflammation	Chronic, Minimal
Spleen [ Leukemia Mononuclear TGLS = 3-8 ]		Leukemia Mononuclear	
Testes [ Adenoma TGLS = 4,5-9 ]	Interstit Cell	Adenoma	

PRIMARY CAUSE OF DEATH

- Spleen Leukemia Mononuclear

\*\* END OF REPORT \*\*

\* PROTOCOL REQUIRED TISSUE