

## ADME NTP Study S0821 2-Butyne-1,4-diol

The contract laboratory abbreviation for the test article is BYD.

Sex/Species: male F344 rats and B6C3F1 mice.

Vehicles: intravenous, 0.9% saline; oral, water; dermal, water or ethanol.

CASRN 110-65-6

Radiolabeled with carbon-14 in the 2 and 3 positions; 2-Butyne-1,4-diol, [1,2-<sup>14</sup>C]

### Studies Performed:

#### Intravenous

- Single 0.5 mg/kg intravenous dose in rats with sacrifice 72 hours postdose (Study A).
- Single 0.5 mg/kg intravenous dose in mice with sacrifice 72 hours postdose (Study O).
- Single 0.5 mg/kg intravenous dose tissue time course study in rats with sacrifice 0.25, 0.5, 1, 2, 4, 8, and 25 hours (h) postdose (Study F).
- Single 5 mg/kg intravenous biliary excretion study in rats with sacrifice 4 hours postdose (Study J).
- Single 5 mg/kg intravenous biliary excretion study in rats with sacrifice 4 hours postdose (Study Q).

#### Dermal

- 6-hour 0.05 mg/cm<sup>2</sup> dermal exposure to rats with an aqueous vehicle and covered dose site – sacrificed 72 hours post 6-hour exposure (Study E).
- 6-hour 5 mg/cm<sup>2</sup> dermal exposure to rats with an aqueous vehicle and covered dose site – sacrificed 72 hours post 6-hour exposure (Study D).
- 6-hour 5 mg/cm<sup>2</sup> dermal exposure to rats with an aqueous vehicle and uncovered dose site – sacrificed 72 hours post 6-hour exposure (Study H).
- 6-hour 5 mg/cm<sup>2</sup> dermal exposure to rats with an ethanol vehicle and a covered dose site – sacrificed 72 hours post 6-hour exposure (Study I).

#### Oral

- Single 50 mg/kg oral gavage dose in rats with sacrifice 72 hours postdose (Study L).

- Single 50 mg/kg oral gavage dose in mice with sacrifice 72 hours postdose (Study P).

In all dermal studies, the appliance was removed and the dose area (either covered or uncovered) washed after 6 hours.

Studies B, C, G, K, M, N, and R were not excreta or tissue distribution studies and are not shown. Study Q differed from Study J in that it included metabolite identification which is not shown here.

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Table 1

**Cumulative Excretion and Tissue Distribution of Radioactivity in Male F-344 Rats Following a Single 0.5 mg/kg Intravenous Dose of [<sup>14</sup>C]BYD (Study A)<sup>a</sup>**

End of Collection Period (h)	Cumulative Percent Dose Excreted				
	Urine	Feces	Volatile Organics <sup>b</sup>	CO <sub>2</sub> <sup>b</sup>	Total
6	28.8 ± 1.7	c	0.08 ± 0.03	7.58 ± 1.30	36.5 ± 2.8
12	44.8 ± 1.8	5.93 ± 3.80	0.09 ± 0.03	18.4 ± 2.4	69.2 ± 2.9
24	49.2 ± 0.9	14.4 ± 3.1	0.08 ± 0.06	20.0 ± 2.5	83.7 ± 1.9
48	50.2 ± 0.8	15.4 ± 3.2	0.09 ± 0.06	21.1 ± 2.6	86.8 ± 1.8
72 <sup>d</sup>	50.6 ± 0.7	15.7 ± 3.2	0.09 ± 0.06	21.7 ± 2.7	88.0 ± 1.7

**Distribution in Tissues**

Tissue	ng-eq BYD per g Tissue	Tissue/Blood Ratio	% Dose in Total Tissue
Adipose <sup>e</sup>	41.8 ± 28.8	1.52 ± 0.94	0.509 ± 0.335
Bladder	39.5 ± 4.5	1.49 ± 0.28	0.00203 ± 0.00014
Blood <sup>e</sup>	26.8 ± 3.0	unity	0.245 ± 0.026
Brain	11.5 ± 2.0	0.432 ± 0.081	0.0137 ± 0.0026
Heart	26.4 ± 2.3	0.989 ± 0.032	0.0137 ± 0.0008
Kidney	76.2 ± 19.6	2.83 ± 0.53	0.0901 ± 0.0188
Liver	95.6 ± 7.0	3.59 ± 0.35	0.650 ± 0.066
Lung	47.6 ± 7.2	1.78 ± 0.17	0.0286 ± 0.0038
Muscle <sup>e</sup>	18.2 ± 9.5	0.677 ± 0.355	1.54 ± 0.82
Skin <sup>e</sup>	46.0 ± 12.2	1.70 ± 0.30	1.38 ± 0.35
Spleen	44.3 ± 3.6	1.66 ± 0.15	0.0170 ± 0.0022
Testis	15.5 ± 1.9	0.583 ± 0.076	0.0294 ± 0.0036
Stomach <sup>f</sup>	NA <sup>g</sup>	NA	0.0392 ± 0.0045
Small intestine <sup>f</sup>	NA	NA	0.178 ± 0.021
Cecum <sup>f</sup>	NA	NA	0.0872 ± 0.0148
Large intestine <sup>f</sup>	NA	NA	0.0897 ± 0.0116

**Overall Percent Dose Recovered**

% Dose Recovered in Carcass and Tissues	% Dose Excreted	% Dose Recovered in Cage Rinse	Overall % Dose Recovered
5.38 ± 0.80	88.0 ± 1.7	0.18 ± 0.03	93.5 ± 1.4

<sup>a</sup> All values expressed as mean ± S.D. (N=4). The target dose was 0.5 mg BYD/kg. The actual dose delivered was 0.560 ± 0.10 mg/kg.

<sup>b</sup> Volatile organics and CO<sub>2</sub> in exhaled breath.

<sup>c</sup> The first feces collection was 0–12 h.

<sup>d</sup> Includes urine present in the bladder at study termination.

<sup>e</sup> Percent of dose in these tissues calculated using the following percentages of body weight: adipose 7.0%, blood 5.2%, muscle 48%, and skin 17%.

<sup>f</sup> Includes contents.

<sup>g</sup> NA = Not applicable.

Table 2

Cumulative Excretion and Tissue Distribution of Radioactivity in Male B6C3F<sub>1</sub> Mice Following a Single 0.5 mg/kg Intravenous Dose of [<sup>14</sup>C]BYD (Study O)<sup>a</sup>

End of Collection Period (h)	Cumulative Percent Dose Excreted				
	Urine	Feces	Volatile Organics <sup>b</sup>	CO <sub>2</sub> <sup>b</sup>	Total
6	13.1 ± 11.5	c	0.076 ± 0.024	9.26 ± 1.58	22.4 ± 12.1
12	20.1 ± 18.8	14.1 ± 9.2	0.118 ± 0.045	11.8 ± 2.2	46.1 ± 23.3
24	38.3 ± 11.1	19.1 ± 9.8	0.186 ± 0.076	13.1 ± 2.1	70.7 ± 14.9
48	46.3 ± 11.2	21.8 ± 8.3	0.218 ± 0.096	14.2 ± 2.0	82.5 ± 7.9
72 <sup>d</sup>	50.2 ± 12.6	24.2 ± 7.6	0.232 ± 0.105	14.5 ± 2.1	89.1 ± 4.6

#### Distribution in Tissues

Tissue	ng-eq PAL per g Tissue	Tissue/Blood Ratio	% Dose in Total Tissue
Adipose <sup>e</sup>	43.9 ± 18.5	0.384 ± 0.183	0.350 ± 0.139
Bladder	107 ± 76	0.901 ± 0.581	0.0103 ± 0.0075
Blood <sup>e</sup>	117 ± 10	unity	0.730 ± 0.068
Brain	10.7 ± 1.1	0.0919 ± 0.0110	0.0153 ± 0.0019
Heart	33.3 ± 3.6	0.286 ± 0.029	0.0134 ± 0.0007
Kidney	90.7 ± 17.2	0.782 ± 0.163	0.123 ± 0.031
Liver	107 ± 85	0.892 ± 0.645	0.356 ± 0.235
Lung	104 ± 16	0.895 ± 0.166	0.0522 ± 0.0063
Muscle <sup>e</sup>	12.9 ± 1.4	0.112 ± 0.0168	0.480 ± 0.070
Skin <sup>e</sup>	42.7 ± 8.6	0.370 ± 0.0941	0.512 ± 0.123
Spleen	53.9 ± 5.2	0.467 ± 0.077	0.00866 ± 0.00206
Testis	14.1 ± 1.9	0.122 ± 0.022	0.00932 ± 0.00116
Stomach <sup>f</sup>	NA <sup>g</sup>	NA	0.0213 ± 0.0075
Small intestine <sup>f</sup>	NA	NA	0.100 ± 0.018
Cecum <sup>f</sup>	NA	NA	0.0629 ± 0.0461
Large intestine <sup>f</sup>	NA	NA	0.0371 ± 0.0142

#### Overall Percent Dose Recovered

% Dose Recovered in Carcass and Tissues	% Dose Excreted	% Dose Recovered in Cage Rinse	Overall % Dose Recovered
2.84 ± 0.59	89.1 ± 4.6	3.31 ± 1.78	95.2 ± 4.4

<sup>a</sup> All values expressed as mean ± S.D. (N=4). The target dose was 0.5 mg BYD/kg. The actual dose delivered was 1.09 ± 0.03 mg/kg.

<sup>b</sup> Volatile organics and CO<sub>2</sub> in exhaled breath.

<sup>c</sup> The first feces collection was 0–12 h.

<sup>d</sup> Includes urine present in the bladder at study termination.

<sup>e</sup> Percent of dose in these tissues calculated using the following percentages of body weight: adipose 9.8%, blood 7.6%, muscle 45%, and skin 14.5%.

<sup>f</sup> Includes contents.

<sup>g</sup> NA = Not applicable.

Table 3

Tissue Distribution of Radioactivity 0.25 h Following a Single 0.5 mg/kg Intravenous Dose of [<sup>14</sup>C]2-Butyne-1,4-diol to Male F-344 Rats (Study F)<sup>a</sup>

Tissue	ng-eq BYD per g Tissue		Tissue/Blood Ratio		% Dose in Total Tissue	
Adipose <sup>b</sup>	53.0	± 9.1	0.113	± 0.013	0.704	± 0.106
Bladder	627	± 203	1.30	± 0.22	0.0264	± 0.0086
Blood <sup>b</sup>	475	± 112	unity		4.67	± 0.90
Brain	398	± 102	0.833	± 0.035	0.494	± 0.084
Heart	451	± 90	0.959	± 0.086	0.266	± 0.076
Kidney	928	± 169	1.98	± 0.33	1.16	± 0.15
Liver	1230	± 366	2.65	± 0.88	9.11	± 2.20
Lung	487	± 109	1.03	± 0.07	0.301	± 0.046
Muscle <sup>b</sup>	454	± 131	0.947	± 0.107	41.1	± 9.9
Skin <sup>b</sup>	330	± 89	0.690	± 0.058	10.60	± 2.40
Spleen	411	± 99	0.864	± 0.042	0.165	± 0.030
Testis	325	± 99	0.678	± 0.130	0.651	± 0.155
Stomach <sup>c</sup>	NA <sup>d</sup>		NA		2.64	± 1.78
Small intestine <sup>c</sup>	NA		NA		16.7	± 12.6
Cecum <sup>c</sup>	NA		NA		0.845	± 0.195
Large intestine <sup>c</sup>	NA		NA		0.542	± 0.098

<sup>a</sup> All values expressed as mean ± S.D. (N=4).

<sup>b</sup> Percent of dose in these tissues calculated using the following percentages of body weight: adipose 7%, blood 5.2%, muscle 48%, and skin 17%.

<sup>c</sup> Includes contents.

<sup>d</sup> NA = Not Applicable.

**Table 4**

**Tissue Distribution of Radioactivity 0.5 h Following a Single 0.5 mg/kg Intravenous Dose of [<sup>14</sup>C]2-Butyne-1,4-diol to Male F-344 Rats (Study F)<sup>a</sup>**

<b>Tissue</b>	<b>ng-eq BYD per g Tissue</b>	<b>Tissue/Blood Ratio</b>	<b>% Dose in Total Tissue</b>
Adipose <sup>b</sup>	41.5 ± 9.7	0.0900 ± 0.0173	0.555 ± 0.138
Bladder	1180 ± 394	2.56 ± 0.85	0.0692 ± 0.0402
Blood <sup>b</sup>	459 ± 55	unity	4.54 ± 0.47
Brain	286 ± 69	0.616 ± 0.073	0.338 ± 0.041
Heart	363 ± 54	0.789 ± 0.039	0.210 ± 0.036
Kidney	1020 ± 182	2.27 ± 0.59	1.33 ± 0.20
Liver	1310 ± 150	2.87 ± 0.42	9.35 ± 0.82
Lung	394 ± 53	0.858 ± 0.047	0.246 ± 0.033
Muscle <sup>b</sup>	347 ± 81	0.750 ± 0.081	31.6 ± 6.3
Skin <sup>b</sup>	272 ± 27	0.594 ± 0.042	8.80 ± 0.93
Spleen	329 ± 52	0.714 ± 0.032	0.130 ± 0.015
Testis	355 ± 49	0.773 ± 0.023	0.707 ± 0.107
Stomach <sup>c</sup>	NA <sup>d</sup>	NA	3.47 ± 3.28
Small intestine <sup>c</sup>	NA	NA	22.7 ± 8.7
Cecum <sup>c</sup>	NA	NA	1.03 ± 0.15
Large intestine <sup>c</sup>	NA	NA	0.512 ± 0.120

<sup>a</sup> All values expressed as mean ± S.D. (N=4).

<sup>b</sup> Percent of dose in these tissues calculated using the following percentages of body weight: adipose 7%, blood 5.2%, muscle 48%, and skin 17%.

<sup>c</sup> Includes contents.

<sup>d</sup> NA = Not Applicable.

Table 5

Tissue Distribution of Radioactivity 1 h Following a Single 0.5 mg/kg Intravenous Dose of [<sup>14</sup>C]2-Butyne-1,4-diol to Male F-344 Rats (Study F)<sup>a</sup>

Tissue	ng-eq BYD per g Tissue	Tissue/Blood Ratio	% Dose in Total Tissue
Adipose <sup>b</sup>	32.4 ± 4.7	0.119 ± 0.014	0.428 ± 0.064
Bladder	1640 ± 1020	5.91 ± 3.40	0.0991 ± 0.0604
Blood <sup>b</sup>	272 ± 15	unity	2.66 ± 0.14
Brain	143 ± 9	0.527 ± 0.021	0.175 ± 0.015
Heart	213 ± 20	0.785 ± 0.072	0.115 ± 0.015
Kidney	1090 ± 134	4.02 ± 0.39	1.43 ± 0.21
Liver	1010 ± 144	3.72 ± 0.37	6.80 ± 0.66
Lung	394 ± 53	0.858 ± 0.047	0.246 ± 0.033
Muscle <sup>b</sup>	191 ± 34	0.699 ± 0.105	17.2 ± 2.9
Skin <sup>b</sup>	196 ± 49	0.716 ± 0.146	6.27 ± 1.56
Spleen	193 ± 10	0.709 ± 0.012	0.0842 ± 0.0060
Testis	238 ± 25	0.877 ± 0.076	0.455 ± 0.028
Stomach <sup>c</sup>	NA <sup>d</sup>	NA	5.73 ± 3.87
Small intestine <sup>c</sup>	NA	NA	39.0 ± 2.8
Cecum <sup>c</sup>	NA	NA	0.917 ± 0.069
Large intestine <sup>c</sup>	NA	NA	0.467 ± 0.086

<sup>a</sup> All values expressed as mean ± S.D. (N=4).

<sup>b</sup> Percent of dose in these tissues calculated using the following percentages of body weight: adipose 7%, blood 5.2%, muscle 48%, and skin 17%.

<sup>c</sup> Includes contents.

<sup>d</sup> NA = Not Applicable.

**Table 6**

**Tissue Distribution of Radioactivity 2 h Following a Single 0.5 mg/kg Intravenous Dose of [<sup>14</sup>C]2-Butyne-1,4-diol to Male F-344 Rats (Study F)<sup>a</sup>**

<b>Tissue</b>	<b>ng-eq BYD per g Tissue</b>	<b>Tissue/Blood Ratio</b>	<b>% Dose in Total Tissue</b>
Adipose <sup>b</sup>	17.7 ± 9.7	0.0877 ± 0.0568	0.236 ± 0.126
Bladder	1940 ± 1470	8.77 ± 7.36	0.0876 ± 0.0672
Blood <sup>b</sup>	115 ± 10	unity	1.14 ± 0.09
Brain	34.5 ± 4.4	0.234 ± 0.152	0.0455 ± 0.0050
Heart	76.2 ± 9.8	0.513 ± 0.333	0.0412 ± 0.0064
Kidney	520 ± 62	3.39 ± 2.17	0.660 ± 0.073
Liver	575 ± 59	3.75 ± 2.42	3.74 ± 0.10
Lung	92.2 ± 6.3	0.612 ± 0.393	0.0573 ± 0.0022
Muscle <sup>b</sup>	51.8 ± 6.8	0.363 ± 0.236	4.75 ± 0.60
Skin <sup>b</sup>	62.3 ± 3.3	0.422 ± 0.274	2.02 ± 0.14
Spleen	80.4 ± 7.5	0.522 ± 0.334	0.0359 ± 0.0031
Testis	56.5 ± 6.5	0.381 ± 0.246	0.117 ± 0.017
Stomach <sup>c</sup>	NA <sup>d</sup>	NA	0.373 ± 0.316
Small intestine <sup>c</sup>	NA	NA	46.1 ± 8.7
Cecum <sup>c</sup>	NA	NA	5.39 ± 9.41
Large intestine <sup>c</sup>	NA	NA	0.316 ± 0.170

<sup>a</sup> All values expressed as mean ± S.D. (N=4).

<sup>b</sup> Percent of dose in these tissues calculated using the following percentages of body weight: adipose 7%, blood 5.2%, muscle 48%, and skin 17%.

<sup>c</sup> Includes contents.

<sup>d</sup> NA = Not Applicable.

Table 7

**Tissue Distribution of Radioactivity 4 h Following a Single 0.5 mg/kg  
Intravenous Dose of [<sup>14</sup>C]2-Butyne-1,4-diol to Male F-344 Rats (Study F)<sup>a</sup>**

<b>Tissue</b>	<b>ng-eq BYD per g Tissue</b>	<b>Tissue/Blood Ratio</b>	<b>% Dose in Total Tissue</b>
Adipose <sup>b</sup>	15.7 ± 3.8	0.148 ± 0.047	0.218 ± 0.059
Bladder	566 ± 262	5.12 ± 2.06	0.0306 ± 0.0209
Blood <sup>b</sup>	108 ± 9	unity	1.11 ± 0.05
Brain	46.4 ± 3.3	0.428 ± 0.026	0.0604 ± 0.0013
Heart	95.9 ± 3.4	0.890 ± 0.100	0.0573 ± 0.0049
Kidney	429 ± 59	3.96 ± 0.50	0.570 ± 0.062
Liver	446 ± 22	4.12 ± 0.27	3.08 ± 0.11
Lung	119 ± 16	1.09 ± 0.09	0.0832 ± 0.0119
Muscle <sup>b</sup>	52.7 ± 5.6	0.485 ± 0.013	4.98 ± 0.37
Skin <sup>b</sup>	50.8 ± 6.6	0.467 ± 0.024	1.70 ± 0.17
Spleen	126 ± 13	1.17 ± 0.15	0.0567 ± 0.0069
Testis	43.7 ± 5.0	0.403 ± 0.027	0.0905 ± 0.0042
Stomach <sup>c</sup>	NA <sup>d</sup>	NA	0.282 ± 0.093
Small intestine <sup>c</sup>	NA	NA	4.38 ± 1.32
Cecum <sup>c</sup>	NA	NA	34.5 ± 1.2
Large intestine <sup>c</sup>	NA	NA	3.22 ± 0.84

<sup>a</sup> All values expressed as mean ± S.D. (N=3).

<sup>b</sup> Percent of dose in these tissues calculated using the following percentages of body weight: adipose 7%, blood 5.2%, muscle 48%, and skin 17%.

<sup>c</sup> Includes contents.

<sup>d</sup> NA = Not Applicable.

**Table 8**

**Tissue Distribution of Radioactivity 8 h Following a Single 0.5 mg/kg Intravenous Dose of [<sup>14</sup>C]2-Butyne-1,4-diol to Male F-344 Rats (Study F)<sup>a</sup>**

<b>Tissue</b>	<b>ng-eq BYD per g Tissue</b>	<b>Tissue/Blood Ratio</b>	<b>% Dose in Total Tissue</b>
Adipose <sup>b</sup>	26.0 ± 7.8	0.279 ± 0.079	0.355 ± 0.109
Bladder	285 ± 136	3.06 ± 1.52	0.0200 ± 0.0154
Blood <sup>b</sup>	92.8 ± 6.4	unity	0.941 ± 0.037
Brain	39.0 ± 0.8	0.422 ± 0.034	0.0512 ± 0.0034
Heart	62.0 ± 1.3	0.670 ± 0.036	0.0339 ± 0.0013
Kidney	325 ± 20	3.51 ± 0.28	0.436 ± 0.014
Liver	409 ± 38	4.42 ± 0.54	2.89 ± 0.27
Lung	136 ± 6	1.47 ± 0.10	0.0890 ± 0.0058
Muscle <sup>b</sup>	36.7 ± 0.8	0.397 ± 0.025	3.43 ± 0.15
Skin <sup>b</sup>	64.9 ± 3.8	0.703 ± 0.078	2.15 ± 0.20
Spleen	131 ± 5	1.41 ± 0.05	0.0590 ± 0.0032
Testis	36.6 ± 4.0	0.395 ± 0.031	0.0780 ± 0.0057
Stomach <sup>c</sup>	NA <sup>d</sup>	NA	0.159 ± 0.015
Small intestine <sup>c</sup>	NA	NA	1.18 ± 0.12
Cecum <sup>c</sup>	NA	NA	11.5 ± 1.03
Large intestine <sup>c</sup>	NA	NA	7.52 ± 1.04

<sup>a</sup> All values expressed as mean ± S.D. (N=4).

<sup>b</sup> Percent of dose in these tissues calculated using the following percentages of body weight: adipose 7%, blood 5.2%, muscle 48%, and skin 17%.

<sup>c</sup> Includes contents.

<sup>d</sup> NA = Not Applicable.

Table 9

**Tissue Distribution of Radioactivity 24 h Following a Single 0.5 mg/kg  
Intravenous Dose of [<sup>14</sup>C]2-Butyne-1,4-diol to Male F-344 Rats (Study F)<sup>a</sup>**

Tissue	ng-eq BYD per g Tissue	Tissue/Blood Ratio	% Dose in Total Tissue
Adipose <sup>b</sup>	107 ± 41	2.24 ± 0.91	1.47 ± 0.57
Bladder	58.1 ± 9.5	1.20 ± 0.18	0.00327 ± 0.00169
Blood <sup>b</sup>	48.4 ± 1.8	unity	0.490 ± 0.013
Brain	12.7 ± 1.2	0.263 ± 0.016	0.0161 ± 0.0024
Heart	36 ± 8	0.749 ± 0.181	0.0199 ± 0.0044
Kidney	102 ± 6	2.10 ± 0.15	0.133 ± 0.009
Liver	234 ± 4	4.85 ± 0.24	1.92 ± 0.10
Lung	87.2 ± 4.2	1.81 ± 0.13	0.0604 ± 0.0052
Muscle <sup>b</sup>	14.2 ± 1.1	0.294 ± 0.020	1.34 ± 0.10
Skin <sup>b</sup>	47.9 ± 6.2	0.994 ± 0.161	1.59 ± 0.23
Spleen	82.6 ± 2.28	1.71 ± 0.02	0.0369 ± 0.0024
Testis	16.5 ± 1.3	0.341 ± 0.028	0.0348 ± 0.0031
Stomach <sup>c</sup>	NA <sup>d</sup>	NA	1.14 ± 1.63
Small intestine <sup>c</sup>	NA	NA	0.691 ± 0.168
Cecum <sup>c</sup>	NA	NA	1.12 ± 0.45
Large intestine <sup>c</sup>	NA	NA	0.705 ± 0.169

<sup>a</sup> All values expressed as mean ± S.D. (N=4).

<sup>b</sup> Percent of dose in these tissues calculated using the following percentages of body weight: adipose 7%, blood 5.2%, muscle 48%, and skin 17%.

<sup>c</sup> Includes contents.

<sup>d</sup> NA = Not Applicable.

Table 10

**Cumulative Excretion of Radioactivity in Bile by Male F-344 Rats Following a  
Single 5 mg/kg Intravenous Dose of [<sup>14</sup>C]BYD (Studies J and Q)<sup>a</sup>**

**Study J**

End of Collection Period (h)	Cumulative Percent of Administered Dose				
	J.M1	J.M2	J.M5	J.M6	Mean ± SD
0.5	10.5	21.3	18.7	19.7	17.6 ± 4.8
1.0	29.0	41.5	36.0	39.1	36.4 ± 5.4
1.5	37.5	51.1	46.2	51.2	46.5 ± 6.4
2.0	42.8	56.5	52.4	57.1	52.2 ± 6.6
2.5	45.5	59.5	56.4	61.0	55.6 ± 7.0
3.0	46.2	60.7	59.6	63.2	57.4 ± 7.6
3.5	46.3	61.5	60.9	64.6	58.3 ± 8.2
4.0	47.2	62.1	62.4	65.6	59.3 ± 8.2

<sup>a</sup> The target dose was 5 mg BYD/kg. The actual dose delivered was 5 mg BYD/kg. All values expressed as mean ± S.D. (N=4).

**Study Q**

End of Collection Period (h)	Cumulative Percent of Administered Dose			
	Q.M1	Q.M3	Q.M5	Mean ± SD
0.5	16.8	14.3	17.3	15.8 ± 2.1
1.0	33.0	30.2	30.0	30.1 ± 0.1
1.5	51.2	40.9	40.4	40.7 ± 0.4
2.0	59.3	46.8	47.6	47.2 ± 0.6
2.5	63.4	49.7	53.1	51.4 ± 2.4
3.0	65.4	52.1	56.6	54.4 ± 3.2
3.5	66.8	53.6	59.1	56.4 ± 3.9
4.0	67.5	54.6	61.4	58.0 ± 4.8

<sup>a</sup> The target dose was 5 mg BYD/kg. The actual dose delivered was 6.51 ± 0.05 mg BYD/kg to male rats. All values expressed as mean ± S.D. (N=3).

Table 11

**Carbon-14 Recovered Following a 6-h Dermal Exposure  
of 0.05 and 5 mg BYD/cm<sup>2</sup> to Male F-344 Rats**

Animal	(Percent of Applied Dose)				Absorption Rate μmol/cm <sup>2</sup> /h
	Appliance	Dose Site Washes	Absorbed <sup>a</sup>	Total	
<b>Study E - 0.05 mg/cm<sup>2</sup> (foam appliance, aqueous formulation)</b>					
EM1	9.32	75.4	14.1	98.8	0.0138
EM3	10.5	81.4	8.40	100	0.00855
EM4	10.2	83.4	10.7	104	0.0104
EM5	7.90	85.2	7.61	101	0.00717
Mean ± S.D.	9.48 ± 1.17	81.4 ± 4.3	10.2 ± 2.9	101 ± 2	0.00998 ± 0.00287
<b>Study D - 5 mg/cm<sup>2</sup> (foam appliance, aqueous formulation)</b>					
DM1	17.4	72.7	4.17	94.3	0.425
DM2	3.10	94.9	3.89	102	0.405
DM4	14.2	76.3	5.56	96.1	0.551
DM5	7.16	86.7	4.21	98.1	0.421
Mean ± S.D.	10.5 ± 6.5	82.7 ± 10.1	4.46 ± 0.75	97.6 ± 3.3	0.451 ± 0.070
<b>Study H - 5 mg/cm<sup>2</sup> (no foam appliance, aqueous formulation)<sup>b</sup></b>					
HM1	N/A <sup>c</sup>	73.8	17.7	93.4 <sup>d</sup>	1.80
HM2	N/A	73.6	27.5	103	2.74
HM3	N/A	50.7	30.8	96.7	3.13
HM4	N/A	55.6	41.2	98.3	4.13
Mean ± S.D.	N/A	68.6 ± 8.7	29.3 ± 9.7	97.9 ± 4.0	2.95 ± 0.96
<b>Study I - 5 mg/cm<sup>2</sup> (foam appliance, ethanolic formulation)</b>					
IM1	8.24	77.1	8.71	94.1	0.838
IM2	4.00	90.1	5.28	99.4	0.526
IM4	2.90	90.9	10.3	104	0.992
IM5	1.98	94.6	5.78	102	0.565
Mean ± S.D.	4.28 ± 2.77	88.2 ± 7.6	7.51 ± 2.39	99.9 ± 4.3	0.730 ± 0.223

<sup>a</sup> Includes excreta, 72-h cage rinse, tissues, dose site, and residual carcass.

<sup>b</sup> 6-h cage rinses were collected during Study H. An average of 5.0 ± 6.8% of the applied dose was recovered in these rinses. Since there was no protective appliance over the dose sites, it is unclear as to whether to categorize this radioactivity as absorbed (excreted urine residue) or unabsorbed (dose site rubbed on the side of the cage) dose.

<sup>c</sup> Not applicable. Foam appliances were not used to cover the dose site in Study H.

<sup>d</sup> Total recovery results for Study H include radioactivity recovered in 6-h cage rinse.

Table 12

Extraction of Radioactivity from Dose Site Skin Following a  
0.05 mg/cm<sup>2</sup> or 5 mg/cm<sup>2</sup> Dermal Dose of BYD<sup>a</sup>

Dose Level	Percent Recovered in Methanol Extracts <sup>b</sup>		
	Extraction 1	Extraction 2	Total Percent Extracted
0.05 mg/cm <sup>2</sup>	17.8 ± 1.6	1.4 ± 0.4	19.2 ± 1.8
5 mg/cm <sup>2</sup>	22.9 ± 1.6	2.2 ± 0.4	25.1 ± 4.8

<sup>a</sup> All values expressed as mean ± SD (N = 4 for each dose level).

<sup>b</sup> Percent of extracted radioactivity associated with skin.

Table 13

**Cumulative Excretion of Radioactivity by Male F-344 Rats During and Following 6-h Dermal Exposure to [<sup>14</sup>C]2-Butyne-1,4-diol<sup>a</sup>**  
**Percent of Absorbed Dose**

End of Collection (h) <sup>b</sup>	Urine	Feces	Volatile Organics <sup>c</sup>	CO <sub>2</sub> <sup>c</sup>	Tissues <sup>d</sup>	Carcass <sup>e</sup>	72-h Cage Rinse <sup>f</sup>	Dose Site <sup>g</sup>
<b>Study E - 0.05 mg/cm<sup>2</sup> (foam appliance, aqueous formulation)</b>								
6	0.913 ± 0.441		0.683 ± 0.229	1.57 ± 0.26				
12	3.93 ± 0.75	0.048 ± 0.014	0.740 ± 0.241	2.28 ± 0.16				
24	10.2 ± 2.5	1.97 ± 1.69	0.792 ± 0.266	5.66 ± 0.99				
48	16.8 ± 0.9	5.92 ± 1.14	0.821 ± 0.274	7.75 ± 0.64				
72	19.4 ± 0.9	7.40 ± 1.03	0.833 ± 0.277	8.76 ± 0.64	4.29 ± 0.94	8.96 ± 8.69	2.33 ± 0.56	47.9 ± 9.9
<b>Study D - 5 mg/cm<sup>2</sup> (foam appliance, aqueous formulation)</b>								
6	3.36 ± 1.78		0.906 ± 0.241	1.63 ± 0.40				
12	7.66 ± 3.82	0.091 ± 0.074	1.01 ± 0.26	2.85 ± 0.91				
24	17.2 ± 6.6	6.60 ± 2.45	1.07 ± 0.27	7.51 ± 1.82				
48	23.2 ± 6.8	10.6 ± 2.9	1.09 ± 0.27	9.90 ± 1.73				
72	25.7 ± 7.2	11.7 ± 2.9	1.10 ± 0.28	11.0 ± 1.9	4.93 ± 0.84	3.90 ± 3.08	1.57 ± 0.09	40.1 ± 11.0
<b>Study H - 5 mg/cm<sup>2</sup> (no foam appliance, aqueous formulation)</b>								
6	10.3 ± 2.0		1.13 ± 0.41	1.30 ± 0.38				
12	20.9 ± 2.2	0.135 ± 0.136	1.18 ± 0.43	2.56 ± 0.58				
24	31.8 ± 1.3	8.29 ± 2.09	1.24 ± 0.45	5.94 ± 0.84				
48	38.4 ± 0.8	15.3 ± 1.9	1.26 ± 0.46	7.98 ± 1.09				
72	40.5 ± 1.3	16.4 ± 2.1	1.28 ± 0.46	8.56 ± 1.13	6.49 ± 0.60	10.5 ± 6.3	1.90 ± 0.94	13.3 ± 6.5
<b>Study I - 5 mg/cm<sup>2</sup> (foam appliance, ethanolic formulation)</b>								
6	4.72 ± 2.15		5.04 ± 1.25	0.955 ± 0.372				
12	12.0 ± 5.6	0.257 ± 0.456	5.81 ± 1.56	2.19 ± 0.75				
24	22.1 ± 6.0	7.37 ± 1.79	6.13 ± 1.64	6.46 ± 1.73				
48	30.2 ± 8.7	13.4 ± 1.8	6.25 ± 1.67	9.04 ± 1.75				
72	34.1 ± 9.3	14.7 ± 1.9	6.28 ± 1.68	10.5 ± 1.9	8.51 ± 3.68	14.8 ± 13.2	2.50 ± 0.44	7.68 ± 1.68

<sup>a</sup> Percent of absorbed dose. All values expressed as mean ± S.D. (N=4). Dash indicates no sample obtained at that time point.

<sup>b</sup> Urine and feces were collected at 6 (urine only), 12, 24, 48, and 72 h. Traps for the collection of exhaled volatile organics and CO<sub>2</sub> were changed at 6, 12, 24, 48, and 72 h.

<sup>c</sup> Volatile organics may arise from exhaled breath or from sublimation of dose from the dose site. Exhaled breath is the source of CO<sub>2</sub>.

<sup>d</sup> Radioactivity present in excised organs and tissues of interest at 72 h.

<sup>e</sup> Radioactivity present in the carcass at 72 h excluding excised organs, sampled tissues, and the dose site.

6-h cage rinses were collected during Study H. An average of 5.0 ± 6.8% of the applied dose was recovered in these rinses. Since there was no protective appliance over the dose sites, it is unclear as to whether to categorize this radioactivity as absorbed (excreted urine residue) or unabsorbed (dose site rubbed on the side of the cage) dose.

<sup>g</sup> Includes entire 12 cm<sup>2</sup> dosing surface.

Table 14

Tissue Distribution of Radioactivity 72 h Following an Application of a 6-h 0.05 mg/cm<sup>2</sup> Dermal Dose of [<sup>14</sup>C]2-Butyne-1,4-diol to Male F-344 Rats (Study E)<sup>a</sup>

Tissue	ng-eq BYD per g Tissue	Tissue/Blood Ratio	% Dose in Total Tissue
Adipose <sup>b</sup>	4.60 ± 2.43	0.661 ± 0.380	0.110 ± 0.059
Bladder	15.3 ± 13.0	1.97 ± 1.15	0.00237 ± 0.00129
Blood <sup>b</sup>	7.04 ± 1.71	unity	0.128 ± 0.016
Brain	3.36 ± 1.43	0.464 ± 0.100	0.00872 ± 0.00149
Heart	15.9 ± 19.0	2.35 ± 2.92	0.0169 ± 0.0201
Kidney	26.0 ± 11.6	3.58 ± 0.72	0.0608 ± 0.0143
Liver	33.6 ± 11.6	4.71 ± 0.61	0.423 ± 0.026
Lung	9.89 ± 2.65	1.40 ± 0.15	0.0125 ± 0.0008
Muscle <sup>b</sup>	4.66 ± 2.26	0.659 ± 0.306	0.748 ± 0.310
Skin <sup>b</sup>	35.3 ± 15.9	4.92 ± 1.45	2.03 ± 0.52
Spleen	13.8 ± 6.8	2.03 ± 1.21	0.0101 ± 0.0055
Testis	3.60 ± 1.69	0.498 ± 0.142	0.0134 ± 0.0031
Stomach <sup>c</sup>	NA <sup>d</sup>	NA	0.0315 ± 0.0025
Small intestine <sup>c</sup>	NA	NA	0.181 ± 0.030
Cecum <sup>c</sup>	NA	NA	0.326 ± 0.108
Large intestine <sup>c</sup>	NA	NA	0.189 ± 0.059

<sup>a</sup> All values expressed as mean ± S.D. (N=4).

<sup>b</sup> Percent of dose in these tissues calculated using the following percentages of body weight: adipose 7%, blood 5.2%, muscle 48%, and skin 17%.

<sup>c</sup> Includes contents.

<sup>d</sup> NA = Not Applicable.

Table 15

**Tissue Distribution of Radioactivity 72 h Following an Application of a 6-h 5 mg/cm<sup>2</sup>  
Dermal Dose of [<sup>14</sup>C]2-Butyne-1,4-diol to Male F-344 Rats (Study D)<sup>a</sup>**

Tissue	ng-eq BYD per g Tissue	Tissue/Blood Ratio	% Dose in Total Tissue
Adipose <sup>b</sup>	184 ± 58	0.784 ± 0.407	0.106 ± 0.040
Bladder	682 ± 156	3.07 ± 2.18	0.00320 ± 0.00073
Blood <sup>b</sup>	268 ± 93	unity	0.111 ± 0.032
Brain	131 ± 19	0.528 ± 0.155	0.00849 ± 0.00134
Heart	261 ± 37	1.05 ± 0.34	0.00681 ± 0.00086
Kidney	896 ± 300	3.44 ± 0.73	0.0592 ± 0.0170
Liver	1030 ± 169	4.20 ± 1.54	0.339 ± 0.022
Lung	390 ± 103	1.50 ± 0.19	0.0119 ± 0.0019
Muscle <sup>b</sup>	223 ± 75	0.903 ± 0.372	0.886 ± 0.362
Skin <sup>b</sup>	1870 ± 325	7.51 ± 2.18	2.60 ± 0.57
Spleen	440 ± 68	1.78 ± 0.59	0.00781 ± 0.00070
Testis	133 ± 15	0.536 ± 0.163	0.0120 ± 0.0012
Stomach <sup>c</sup>	NA <sup>d</sup>	NA	0.0286 ± 0.0168
Small intestine <sup>c</sup>	NA	NA	0.145 ± 0.028
Cecum <sup>c</sup>	NA	NA	0.403 ± 0.099
Large intestine <sup>c</sup>	NA	NA	0.201 ± 0.051

<sup>a</sup> All values expressed as mean ± S.D. (N=4).

<sup>b</sup> Percent of dose in these tissues calculated using the following percentages of body weight: adipose 7%, blood 5.2%, muscle 48%, and skin 17%.

<sup>c</sup> Includes contents.

<sup>d</sup> NA = Not Applicable.

Table 16

**Tissue Distribution of Radioactivity 72 h Following an Application of a 6-h 5 mg/cm<sup>2</sup> Dermal Dose of [<sup>14</sup>C]2-Butyne-1,4-diol to Male F-344 Rats (Study H)<sup>a</sup>  
(No Foam Appliance Surrounding the Dose Site)**

Tissue	ng-eq BYD per g Tissue	Tissue/Blood Ratio	% Dose in Total Tissue
Adipose <sup>b</sup>	1260 ± 930	0.563 ± 0.306	0.101 ± 0.050
Bladder	6060 ± 3150	2.82 ± 0.80	0.00340 ± 0.00119
Blood <sup>b</sup>	2040 ± 513	unity	0.136 ± 0.010
Brain	778 ± 215	0.379 ± 0.036	0.00655 ± 0.00091
Heart	1500 ± 471	0.722 ± 0.057	0.00592 ± 0.00045
Kidney	6820 ± 1800	3.33 ± 0.27	0.0691 ± 0.0069
Liver	10000 ± 2570	4.91 ± 0.43	0.440 ± 0.066
Lung	2340 ± 543	1.15 ± 0.08	0.0114 ± 0.0018
Muscle <sup>b</sup>	2230 ± 1530	1.03 ± 0.52	1.27 ± 0.59
Skin <sup>b</sup>	16500 ± 6260	8.22 ± 2.77	3.68 ± 1.28
Spleen	2330 ± 449	1.15 ± 0.10	0.00676 ± 0.00137
Testis	920 ± 290	0.460 ± 0.141	0.0140 ± 0.0047
Stomach <sup>c</sup>	NA <sup>d</sup>	NA	0.0452 ± 0.0213
Small intestine <sup>c</sup>	NA	NA	0.119 ± 0.018
Cecum <sup>c</sup>	NA	NA	0.368 ± 0.060
Large intestine <sup>c</sup>	NA	NA	0.216 ± 0.037

<sup>a</sup> All values expressed as mean ± S.D. (N=4).

<sup>b</sup> Percent of dose in these tissues calculated using the following percentages of body weight: adipose 7%, blood 5.2%, muscle 48%, and skin 17%.

<sup>c</sup> Includes contents.

<sup>d</sup> NA = Not Applicable.

Table 17

**Tissue Distribution of Radioactivity 72 h Following a 6-h 5 mg/cm<sup>2</sup>  
Dermal Exposure to [<sup>14</sup>C]2-Butyne-1,4-diol in Male F-344 Rats (Study I)<sup>a</sup>**

Tissue	ng-eq BYD per g Tissue	Tissue/Blood Ratio	% Dose in Total Tissue
Adipose <sup>b</sup>	597 ± 520	0.816 ± 0.621	0.173 ± 0.093
Bladder	3130 ± 2080	4.43 ± 2.84	0.00802 ± 0.00396
Blood <sup>b</sup>	690 ± 72	unity	0.178 ± 0.043
Brain	337 ± 111	0.483 ± 0.126	0.0124 ± 0.0014
Heart	562 ± 274	0.792 ± 0.303	0.00885 ± 0.00162
Kidney	2060 ± 549	2.95 ± 0.49	0.0798 ± 0.0073
Liver	3490 ± 1010	4.99 ± 0.89	0.552 ± 0.042
Lung	908 ± 318	1.29 ± 0.32	0.0174 ± 0.0020
Muscle <sup>b</sup>	1960 ± 2530	2.60 ± 3.15	3.47 ± 3.76
Skin <sup>b</sup>	5370 ± 1350	7.70 ± 1.27	2.44 ± 2.87
Spleen	1060 ± 464	1.49 ± 0.50	0.0110 ± 0.0014
Testis	584 ± 460	0.804 ± 0.543	0.0320 ± 0.0158
Stomach <sup>c</sup>	NA <sup>d</sup>	NA	0.0302 ± 0.0078
Small intestine <sup>c</sup>	NA	NA	0.285 ± 0.165
Cecum <sup>c</sup>	NA	NA	0.930 ± 0.199
Large intestine <sup>c</sup>	NA	NA	0.299 ± 0.210

<sup>a</sup> All values expressed as mean ± S.D. (N=4). Ethanol was used as the dose vehicle.

<sup>b</sup> Percent of dose in these tissues calculated using the following percentages of body weight: adipose 7%, blood 5.2%, muscle 48%, and skin 17%.

<sup>c</sup> Includes contents.

<sup>d</sup> NA = Not Applicable.

Table 18

**Recovery of Radioactivity Following Oral Administration  
of 50 mg/kg [<sup>14</sup>C]BYD to Male F-344 Rats (Study L)<sup>a</sup>**

End of Collection Period (h)	Cumulative Percent Dose Excreted				
	Urine	Feces	Volatile Organics <sup>b</sup>	CO <sub>2</sub> <sup>b</sup>	Total
6	22.5 ± 2.4	c	0.01 ± 0.00	1.9 ± 0.2	24.5 ± 2.4
12	37.1 ± 1.0	0.8 ± 1.0	0.02 ± 0.01	4.4 ± 0.3	42.2 ± 1.3
24	49.1 ± 1.7	16.7 ± 4.6	0.03 ± 0.01	8.1 ± 0.7	73.9 ± 3.1
48	53.2 ± 1.7	21.6 ± 2.8	0.04 ± 0.01	9.1 ± 1.0	83.9 ± 0.9
72 <sup>d</sup>	53.9 ± 1.9	22.1 ± 2.7	0.04 ± 0.01	9.4 ± 1.0	85.7 ± 0.7

Distribution in Tissues				
Tissue	ng-eq PAL per g Tissue	Tissue/Blood Ratio	% Dose in Total Tissue	
Adipose <sup>e</sup>	442 ± 94	0.265 ± 0.054	0.0609	± 0.0124
Bladder	1760 ± 195	1.06 ± 0.09	0.00106	± 0.00017
Blood <sup>e</sup>	1660 ± 81	unity	0.169	± 0.011
Brain	528 ± 86	0.317 ± 0.041	0.00750	± 0.00107
Heart	1050 ± 78	0.632 ± 0.028	0.00609	± 0.00044
Kidney	4850 ± 844	2.91 ± 0.43	0.0679	± 0.0098
Liver	8160 ± 688	4.90 ± 0.33	0.583	± 0.039
Lung	1760 ± 151	1.06 ± 0.05	0.0120	± 0.0010
Muscle <sup>e</sup>	493 ± 73	0.296 ± 0.040	0.469	± 0.066
Skin <sup>e</sup>	1370 ± 93	0.828 ± 0.073	0.462	± 0.030
Spleen	1710 ± 151	1.02 ± 0.05	0.00774	± 0.00106
Testis	500 ± 84	0.300 ± 0.043	0.0110	± 0.0018
Stomach <sup>f</sup>	NA <sup>g</sup>	NA	0.0211	± 0.0075
Small intestine <sup>f</sup>	NA	NA	0.0728	± 0.0054
Cecum <sup>f</sup>	NA	NA	0.0690	± 0.0240
Large intestine <sup>f</sup>	NA	NA	0.0357	± 0.0056
Carcass <sup>h</sup>	NA	NA	1.56	± 0.09

Overall Percent Dose Recovered			
% Dose Recovered in Tissues	% Dose Excreted	% Dose Recovered in Cage Rinse	Overall % Dose Recovered
2.5 ± 0.1	85.4 ± 0.7	0.26 ± 0.05	88.2 ± 0.7

<sup>a</sup> All values expressed as mean ± S.D. (N=5). The target dose was 50 mg BYD/kg. The actual dose delivered was 50.1 ± 0.6 mg/kg.

<sup>b</sup> Volatile organics and CO<sub>2</sub> in exhaled breath.

<sup>c</sup> The first feces collection was 0–12 h.

<sup>d</sup> Results for urine at 72 h include urine remaining in the bladder at study termination.

<sup>e</sup> Percent of dose in these tissues calculated using the following percentages of body weight: adipose 7.0%, blood 5.2%, muscle 48%, and skin 17%.

<sup>f</sup> Includes contents.

<sup>g</sup> NA = Not applicable.

<sup>h</sup> Carcass values are based on the residual digested carcass after the removal of the listed tissues (i.e., percent dose measured in skin, adipose, blood, and muscle was subtracted from the total percent dose measured in the carcass).

Table 19

**Recovery of Radioactivity Following Single Oral Administration  
of 50 mg/kg [<sup>14</sup>C]BYD to Male B6C3F<sub>1</sub> Mice (Study P)<sup>a</sup>**

End of Collection Period (h)	Cumulative Percent Dose Excreted				
	Urine	Feces	Volatile Organics <sup>b</sup>	CO <sub>2</sub> <sup>b</sup>	Total
6	23.1 ± 15.6	c	0.05 ± 0.01	2.7 ± 0.2	25.8 ± 15.7
12	32.5 ± 9.5	14.1 ± 1.4	0.08 ± 0.01	4.0 ± 0.2	50.7 ± 9.7
24	42.9 ± 7.5	17.9 ± 1.2	0.14 ± 0.02	4.7 ± 0.2	65.6 ± 6.5
48	51.3 ± 7.9	19.2 ± 1.7	0.18 ± 0.03	5.1 ± 0.2	75.7 ± 6.1
72 <sup>d</sup>	54.0 ± 5.5	20.1 ± 2.4	0.20 ± 0.05	5.4 ± 0.3	79.7 ± 3.1

Tissue	Distribution in Tissues		
	ng-eq PAL per g Tissue	Tissue/Blood Ratio	% Dose in Total Tissue
Adipose <sup>e</sup>	968 ± 535	0.892 ± 0.461	0.147 ± 0.080
Bladder	1750 ± 216	1.63 ± 0.10	0.00295 ± 0.00028
Blood <sup>e</sup>	1070 ± 70	unity	0.123 ± 0.003
Brain	212 ± 43	0.198 ± 0.036	0.00530 ± 0.00108
Heart	570 ± 109	0.531 ± 0.081	0.00463 ± 0.00139
Kidney	2530 ± 275	2.36 ± 0.24	0.0626 ± 0.0052
Liver	2630 ± 33	2.47 ± 0.16	0.209 ± 0.012
Lung	1110 ± 92	1.04 ± 0.08	0.0110 ± 0.0010
Muscle <sup>e</sup>	274 ± 29	0.257 ± 0.036	0.192 ± 0.028
Skin <sup>e</sup>	2050 ± 505	1.91 ± 0.45	0.461 ± 0.0109
Spleen	638 ± 54	0.596 ± 0.014	0.00241 ± 0.00055
Testis	246 ± 48	0.229 ± 0.037	0.00266 ± 0.00065
Stomach <sup>f</sup>	NA <sup>g</sup>	NA	0.00991 ± 0.00222
Small intestine <sup>f</sup>	NA	NA	0.0340 ± 0.0085
Cecum <sup>f</sup>	NA	NA	0.0227 ± 0.0123
Large intestine <sup>f</sup>	NA	NA	0.0229 ± 0.0126
Carcass <sup>h</sup>	NA	NA	1.39 ± 0.39

Overall Percent Dose Recovered			
% Dose Recovered in Tissues	% Dose Excreted	% Dose Recovered in Cage Rinse	Overall % Dose Recovered
1.8 ± 0.4	79.7 ± 3.1	3.9 ± 2.3	85.4 ± 2.0

<sup>a</sup> All values expressed as mean ± S.D. (N=4). The target dose was 50 mg BYD/kg. The actual dose delivered was 62.4 ± 1.4 mg/kg.

<sup>b</sup> Volatile organics and CO<sub>2</sub> in exhaled breath.

<sup>c</sup> The first feces collection was 0–12 h.

<sup>d</sup> Includes urine present in the bladder at study termination.

<sup>e</sup> Percent of dose in these tissues calculated using the following percentages of body weight: adipose 9.8%, blood 7.6%, muscle 45%, and skin 14.5%.

<sup>f</sup> Includes contents.

<sup>g</sup> NA = Not applicable.

<sup>h</sup> Carcass values are based on the residual digested carcass after the removal of the listed tissues (i.e., percent dose measured in skin, adipose, blood, and muscle was subtracted from the total percent dose measured in the carcass).