Appendix D

Feeding Study Data as Reported

Acronyms

14C	carbon-14
2,4-D	2,4-dichlorophenoxyacetic acid
2,4,5-T	2,4,5-trichlorophenoxy acetic acid
AFM1	aflatoxin metabolite
AOAC	Association of Official Analytical Chemists
aPCP	analytical pentachlorophenol
BHC	lindane
BW	body weight
C14DD	carbon-14-labelled dibenzo(p)dioxin
DCHBA	3,6-dichloro-2-hydroxybenzoic acid
DDD	p,p'-dichlorodiphenyldichloroethane
DDE	p,p'-dichlorodiphenyldichloroethylene
DDT	p,p'-dichlorodiphenyltrichloroethane
DES	diethylstilbestrol
DW	dry weight
EC-GLC	electron-capture gas-liquid chromatography
GC	gas chromatography
GC-MS	gas chromatography-mass spectrometry
GLC	gas-liquid chromatography
GLPC	gas-liquid-phase chromatography
HCB	hexachlorobenzene
HEOD	dieldrin
HpCDD	heptachlorodibenzo(p)dioxin
HpCDF	heptachlorodibenzo(p)furan
HxCDD	hexachlorodibenzo(p)dioxin
HxCDF	hexachlorodibenzo(p)furan
LSC	liquid scintillation counting
MCPA	2-methyl-4-chlorophenoxyacetic acid
MS	mass spectrometry
Ni-electron	nickel-electron
OCDD	octachlorodibenzo(p)dioxin
OCDF	octachlorodibenzo(p)furan
PCB	polychlorinated biphenyls
PCDD	polychlorinated dibenzo(p)dioxin
PCDF	polychlorinated dibenzo(p)furan
PCNB	pentachloronitrobenzene

Acronyms (continued)

PCP	pentachlorophenol
PeA	pentachloroanisole
PeCDD	pentachlorodibenzo(p)dioxin
PeCDF	pentachlorodibenzo(p)furan
ppb	parts per billion
ppm	parts per million
ppt	parts per trillion
Sr	strontium
TCDD	tetrachlorodibenzo(p)dioxin
TCDF	tetrachlorodibenzo(p)furan
TDE	tetrachlordiphenylethane
TLC	thin-layer chromatography
tPCP	technical pentachlorophenol
U.S. FDA	U.S. Food and Drug Administration

Akhtar et al., 1992

Journal of Environmental Science & Health. B27: 235

Lactating dairy cows were fed deltamethrin at 2 or 10 ppm for 28 days. Residues were measured in milk and tissues. Depletion was very rapid in milk, indicating a half-life of about 1 day. Trace amounts of metabolites Br2CA and 3-Pbacid were also detected in the milk. Higher fat content in milk resulted in higher deltamethrin residues.

deltamethrin

Experiment Comments: Milk production and milk residue data are midpoints of the ranges reported for each treatment group. Milk fat data are averages over the whole length of the study. Note that though 6 animals were studied, data were presented as averages for two groups of 3 animals.

Analytical Method: Stock solutions of deltamethrin were prepared in acetone and adminstered to grain. Cows were monitored for 14 days prior to study. 7 cows were treated with either 2 ppm (3 cows), 10 ppm (3 cows), or control (1 cow). The cows were then slaughtered 1, 4, or 9 days after the last dose. No major changes in milk production, feed intake, or weight were observed. Milk and tissue samples were extracted with hexane. The samples were then analyzed by GC or GC-MS. Recovery from milk ranged between 67%-75%. Detection limits varied with the column and detector conditions.

Animal Data

Animal ID	Days Dosed	Lactation status	Description	Chemical Intake Rate	Feed Concentration	Feed Intake Rate	Weight
1a	28	lactating		288 mg/d	2 ppm	14.4 kgDW/d	
Note: killed 24 h after last dose							
2a	28	lactating		288 mg/d	2 ppm	14.4 kgDW/d	
Note: killed 4 d after last dose							
3a	28	lactating		288 mg/d	2 ppm	14.4 kgDW/d	
Note: killed 9 d after last dose							
1b	28	lactating		1.4 g/d	10 ppm	14.4 kgDW/d	
Note: killed 24 h after last dose							
2b	28	lactating		1.4 g/d	10 ppm	14.4 kgDW/d	
Note: killed 4 d after last dose							
3b	28	lactating		1.4 g/d	10 ppm	14.4 kgDW/d	
Note: killed 9 d after last dose							

Media Concentrations

Day	Beef fat	Beef tissue	Milk fat	Whole milk
Animal ID 1a				
4				0.0095 ug/g / 3.15%

Note: Concentration data includes (concentration in reported units / percent fat).

Akhtar et al., 1992

Journal of Environmental Science & Health. B27: 235

Day	Beef fat	Beef tissue	Milk fat	Whole milk
10				0.011 ug/g / 3.15%
11				0.0065 ug/g / 3.15%
18				0.0135 ug/g / 3.15%
25				0.002 ug/g / 3.15%
28				0.01 ug/g / 3.15%
29	0.042 ug/g (subcutaneous)			0.008 ug/g / 3.15%
Animal ID 2a				
32	0.037 ug/g (subcutaneous)			
Animal ID 3a				
37	0.027 ug/g (subcutaneous)			
Animal ID 1b				
1				0.003 ug/g / 3.79%
2				0.0115 ug/g / 3.79%
3				0.0215 ug/g / 3.79%
4				0.032 ug/g / 3.79%
10				0.031 ug/g / 3.79%
11				0.0255 ug/g / 3.79%
18				0.029 ug/g / 3.79%
25				0.033 ug/g / 3.79%
28				0.0295 ug/g / 3.79%
29	0.128 ug/g (subcutaneous)			0.029 ug/g / 3.79%
30				0.0085 ug/g / 3.79%
31				0.005 ug/g / 3.79%
Animal ID 2b				
32	0.089 ug/g (subcutaneous)			
Animal ID 3b				
37	0.081 ug/g (subcutaneous)			

Note: Concentration data includes (concentration in reported units / percent fat).

Akhtar et al., 1986

Journal of Agricultural and Food Chemistry. 34: 758

Fate and residues of radiolabeled (14C) deltamethrin were determined in two lactating cows after an oral administration for 3 days of 10 mg/kg body weight of deltamethrin. Milk samples were taken daily and the animals were slaughtered 24 h after the last dose for tissue analysis. The chemical was poorly absorbed and mostly excreted in the feces. Most of the 14C residues detected in the milk were found in the cream (78%-96%).

deltamethrin

Experiment Comments: Cattle were slaughtered 24 h after the last dose for body fat and tissue analyses. Both animals were fed deltamethrin but in different forms. Animal 1 was fed gem-dimethyl and Animal 2 was fed benzyl. Note: milk samples were taken 8 h and 24 h after each feeding. The average values were recorded here. Data provided are for total equivalents. Unchanged deltamethrin was estimated as 0.01-0.14 ug/g.

Analytical Method: Radiolabeled 14C deltamethrin was administered orally via a gelatin capsule to the dairy cows once daily. Total radioactivity was measured by direct LSC in triplicate. Two extraction procedures were used for milk samples: the first was with hexane, the second was with a mixture of ethanol-ether. Body fat samples were extracted with hexane. TLC analysis was used to determine the metabolites.

Animal Data

Animal ID	Days Dosed	Lactation status	Description	Chemical Intake Rate	Feed Concentration	Feed Intake Rate	Weight
1	3	lactating	Holstein	5.50 g/d			557 kg
2	3	lactating	Ayrshire	5.05 g/d			504 kg

Media Concentrations

Day	Beef fat		Beef tissue		Milk fat	Whole milk
Animal ID 1						
3						0.62 ug/g / 3.79%
4	0.40 ug/g fat)	(subcutaneous				
4	0.28 ug/g	(abdominal fat)				
Animal ID 2						
3						0.34 ug/g / 3.27%
4	0.54 ug/g fat)	(subcutaneous	0.09 ug/g	(leg muscle)		
4	0.56 ug/g	(abdominal fat)	0.06 ug/g	(breast muscle)		

Note: Concentration data includes (concentration in reported units / percent fat).

Arant, 1948

Journal of Economic Entomology. 41: 26

Not primarily a source for cattle data; the actual study involved caterpillars. However, results of a feeding study conducted by the authors for cattle are also recorded in this article.

DDT

Experiment Comments:

Analytical Method: Not provided

Animal Data

Animal ID	Days Dosed	Lactation status	Description	Chemical Intake Rate	Feed Concentration	Feed Intake Rate	Weight
1	143	non-lactating	STEER		48 ppm		
Note: FED HAY							
2	105	non-lactating	STEER		15 ppm		
Note: FED UNHUSKED CORN							
3	105	non-lactating	STEER		15 ppm		
Note: FED UNHUSKED CORN							

Media Concentrations

Day	Beef fat	Beef tissue	Milk fat	Whole milk
Animal ID 1				
143	84 ppm (Range was 80-88 ppm)			
Animal ID 2				
105	46 ppm			
Animal ID 3				
105	65 ppm			

Note: Concentration data includes (concentration in reported units / percent fat).

Atallah et al., 1976

Journal of Agricultural and Food Chemistry. 24: 1007

Radiolabeled methazole was fed to cows at 0.5, 2.5, and 10 ppm for 14 days. Methazole was very efficiently voided from the dairy animals, mostly through the urine. By day 14 there was over 90% elimination of the 14C-methazole consumed during the treatment. After the last dose, the cows were slaughtered and analyzed for tissue samples. For cows at 0.5 and 2.5 ppm, the concentrations were nondetectable in the fat and muscle. Metabolites of methazole were detected.

methazole

Experiment Comments: All media data are reported in ppm of 14C methazole equivalents. None of the cows had changes in weight, feed consumption, or milk production. The animal weight reported is an average.

Analytical Method: Cows were fed dosages equivalent to 0.5, 2.5, and 10 ppm radiolabeled methazole via gelatin capsules. Milk samples were counted by direct radioassay. The milk underwent numerous extractions and partitions and then was analyzed in three fractions: the water soluble metabolites, the organosoluble metabolites, and the oil soluble metabolites by TLC. Cows were slaughtered after the final dosing day. Beef samples were combusted and then radioassayed.

Animal Data

Animal ID	Days Dosed	Lactation status	Description	Chemical Intake Rate	Feed Concentration	Feed Intake Rate	Weight
1	14	lactating	Holstein	11 mg/d	0.5 ppm		705 kg
2	14	lactating	Holstein	55 mg/d	2.5 ppm		705 kg
3	14	lactating	Holstein	220 mg/d	10 ppm		705 kg

Media Concentrations

Day	Beef fat	Beef tissue	Milk fat	Whole milk
Animal ID 1				
1				0.001 ppm
2				0.001 ppm
3				0.002 ppm
7				0.002 ppm
10				0.002 ppm
14				0.002 ppm
Animal ID 2				
1				0.005 ppm

Note: Concentration data includes (concentration in reported units / percent fat).

Atallah et al., 1976

Journal of Agricultural and Food Chemistry. 24: 1007

Day	Beef fat		Beef tissue		Milk fat	Whole milk
2						0.01 ppm
3						0.011 ppm
7						0.014 ppm
10						0.013 ppm
14						0.014 ppm
Animal ID 3						
1						0.02 ppm
2						0.032 ppm
3						0.039 ppm
7						0.039 ppm
10						0.045 ppm
14			0.008 ppm	(hindleg)		
14	0.018 ppm	(subcutaneous)	0.007 ppm	(neck)		0.038 ppm
14			0.011 ppm	(foreleg)		

Note: Concentration data includes (concentration in reported units / percent fat).

Atallah et al., 1980

Journal of Agricultural and Food Chemistry. 28: 278

14C buthidazole was administered orally twice daily for 14 days to cows at dosages of 0.5, 2.5, and 10 ppm. 80% of total administered 14C was excreted in the urine, and 1% was detected in the milk. Residues as a function of dietary concentration were 1.4% for milk and 2% for muscle. Absorption and metabolism were rapid, with a near equilibrium between intake and excretion reached within 5 days.

buthidazole

Experiment Comments: Three of four cows were slaughtered 12 hours after final dose. The remaining cow was maintained on an untreated diet for 7 days. No specific weights were provided, but all animals weighed between 402-479 kg. Concentrations in the article are provided for total 14C. These concentrations were converted to buthidazole using the average percentage of C14 in milk attributed to buthidazole of 1.9% . This percent was not specifically determined for muscle samples, so the percentage for milk was also used to adjust the muscle concentrations.

Analytical Method: 14C buthidazole was administered via a gelatin capsule and fed twice daily. Samples were measured using LSC with 99% recovery. Samples of tissue and milk were fractionated and extracted multiple times and then analyzed by TLC. TLC identified 12 metabolites of the chemical. Mass spectrometry was also performed.

Animal Data

Animal ID	Days Dosed	Lactation status	Description	Chemical Intake Rate	Feed Concentration	Feed Intake Rate	Weight
1	14	lactating	Holstein		0.5 ppm	14 kgDW/d	440.5 kg
Note: Weight is an average.							
2	14	lactating	Holstein		2.5 ppm	14 kgDW/d	440.5 kg
Note: Weight is an average.							
4	14	lactating	Holstein		10 ppm	14 kgDW/d	440.5 kg
Note: Weight is an average.							

Media Concentrations

Day	Beef fat	Beef tissue	Milk fat	Whole milk
Animal ID 1				
7				0.209 ppb
14				0.25 ppb
Animal ID 2				
7				0.57 ppb
14				0.42 ppb

Note: Concentration data includes (concentration in reported units / percent fat).

Atallah et al., 1980

Journal of Agricultural and Food Chemistry. 28: 278

Day	Beef fat	Beef tissue	Milk fat	Whole milk
Animal ID 4				
7				3.42 ppb
14		0.40 ppb (muscle)		2.9 ppb

Note: Concentration data includes (concentration in reported units / percent fat).

Bache et al., 1960

Journal of Agricultural and Food Chemistry. 8: 408

Technical heptachlor epoxide was fed to diary cows at 0.5 and 1 ppm for 2 weeks.

heptachlor epoxide

Experiment Comments: Cow feed intake was 40 lbs hay, 50 lbs silage, and grain at a rate of 1 lb/4 lbs milk produced. Could calculate feed intake rates somehow. Tissue residues are not corrected for recoveries and checks.

Analytical Method: Fed technical heptachlor epoxide to cows, basing feed concentration on cows' previous week's intake by weighing epoxide on microbalance and adding it to the grain ration every day. To measure residues in milk, a pentane extraction was performed and absorbance was used for quantification. Recovery was 113.5% in cream.

Animal Data

Animal ID	Days Dosed	Lactation status	Description	Chemical Intake Rate	Feed Concentration	Feed Intake Rate	Weight
22	14	lactating	holstein		0.5 ppm		
30	14	lactating	holstein		1 ppm		

Media Concentrations

Day	Beef fat	Beef tissue	Milk fat	Whole milk
Animal ID 22				
1			0.13 ppm (butterfat)	
2			0.21 ppm (butterfat)	
3			0.25 ppm (butterfat)	
4			0.36 ppm (butterfat)	
5			0.38 ppm (butterfat)	
7			0.35 ppm (butterfat)	
14			0.29 ppm (butterfat)	
16			0.3 ppm (butterfat)	
18			0.19 ppm (butterfat)	
28			0.24 ppm (butterfat)	
Animal ID 30				
1			0.05 ppm (Butterfat)	

Note: Concentration data includes (concentration in reported units / percent fat).

Bache et al., 1960

Journal of Agricultural and Food Chemistry. 8: 408

Day	Beef fat	Beef tissue	Milk fat	Whole milk
3			1.34 ppm (Butterfat)	
4			1.04 ppm (Butterfat)	
7			1.71 ppm (Butterfat)	
14			1.94 ppm (Butterfat)	
16			1.2 ppm (Butterfat)	
21			0.72 ppm (Butterfat)	
28			0.52 ppm (Butterfat)	

Note: Concentration data includes (concentration in reported units / percent fat).

Baldwin et al., 1976

Pesticide Science. 7: 575

14C endrin was administered to two lactating dairy cows in their feed for 21 days. The intake and excretion of endrin reached equilibrium between 4 and 9 days. Residues in milk comprised mostly unchanged endrin present in the fat. The chemical was also detected in muscle samples. Another experiment was conducted using laying hens. The results showed that endrin is more highly metabolized in cows than hens, but the major metabolite was the same (anti-12-hydroxyendrin).

endrin

Experiment Comments: Feed intake is assumed to be DW and is only an approximation.

Analytical Method: 14C endrin was made up in an acetone solution to 414.4 uCi/mL. The solution was added dropwise (1.19 mg endrin) to 500 g portions of "Red Label" nuts. Samples were monitored for total radioactivity by scintillation counting. Further analysis was conducted using GLC to identify chemicals. Concentrations in milk and fat did not contain any metabolites based on the GLC analysis. Samples were corrected for recovery rates.

Animal Data

Animal ID	Days Dosed	Lactation status	Description	Chemical Intake Rate	Feed Concentration	Feed Intake Rate	Weight
1	21	lactating	Friesian		0.1 mg/kg	20 kgDW/d	450 kg
2	21	lactating	Friesian		0.1 mg/kg	20 kgDW/d	650 kg

Media Concentrations

Day	Beef fat	Beef tissue	Milk fat	Whole milk
Animal ID 1				
7				0.006 mg/kg / 11.3%
14				0.003 mg/kg / 3.2%
21	0.060 mg/kg (omental)	0.002 mg/kg (rear leg)		
21	0.070 mg/kg (subcutaneous)	0.002 mg/kg (lumbar)		0.003 mg/kg / 8.1%
Animal ID 2				
7				0.003 mg/kg / 4.2%
14				0.004 mg/kg / 6.2%
21	0.050 mg/kg (omental)	0.001 mg/kg (rear leg)		
21	0.041 mg/kg (subcutaneous)	0.001 mg/kg (lumbar)		0.003 mg/kg / 4.6%

Note: Concentration data includes (concentration in reported units / percent fat).

Bateman et al., 1953

Journal of Agricultural and Food Chemistry. 1: 322

Toxaphene was applied to alfalfa fields at levels of 1, 2, and 4 lbs/acre. Alfalfa was then harvested on the 8th day and fed to 8 Holstein cows for 112 days. Both beef and milk data were collected.

toxaphene

Experiment Comments: Feed concentrations were calculated by averaging the residue measurements from samples collected Jan. 16- 29 and April 22 -May 1. These data are in Table 1 of the article.

Analytical Method: Measured toxaphene residues on hay and alfalfa using Umhoefer's total chlorine method and amperometrical titration with Laitinen and Kolthoff's methods.

Animal Data

Animal ID	Days Dosed	Lactation status	Description	Chemical Intake Rate	Feed Concentration	Feed Intake Rate	Weight
E 220	112	lactating	Holstein		57 ppm	45.3 lbsDW/d	1304 lbs
HU 187	112	lactating	Holstein		144.9 ppm	43.3 lbsDW/d	1300 lbs
W 254	112	lactating	Holstein		252.4 ppm	36.9 lbsDW/d	1166 lbs
HU 188	112	lactating	Holstein		324 ppm	45.4 lbsDW/d	1215 lbs
HU 132	112	lactating	Holstein		69.4 ppm	44.3 lbsDW/d	1433 lbs
A 145	112	lactating	Holstein		120.7 ppm	46.6 lbsDW/d	1252 lbs

Media Concentrations

Day	Beef fat	Beef tissue	Milk fat	Whole milk
Animal ID E 220				
5				1.3 ppm / 3.4%
8				1.5 ppm / 3.4%
13				11.6 ppm / 3.4%
19				0.3 ppm / 3.4%
22				1.8 ppm / 3.4%
29				7.3 ppm / 3.4%
35				0.3 ppm / 3.4%
42				3.7 ppm / 3.4%
50				1.8 ppm / 3.4%

Note: Concentration data includes (concentration in reported units / percent fat).

Bateman et al., 1953

Journal of Agricultural and Food Chemistry. 1: 322

Day	Beef fat	Beef tissue	Milk fat	Whole milk
56				0.8 ppm / 3.4%
63				1.8 ppm / 3.4%
70				2.1 ppm / 3.4%
77				1.1 ppm / 3.4%
84				0.8 ppm / 3.4%
91				1.6 ppm / 3.4%
98				3.1 ppm / 3.4%
105				2.6 ppm / 3.4%
112				1.1 ppm / 3.4%
Animal ID HU 187				
5				1.3 ppm / 3.6%
8				2.3 ppm / 3.6%
13				11.6 ppm / 3.6%
19				2.8 ppm / 3.6%
22				5.3 ppm / 3.6%
29				1.8 ppm / 3.6%
35				7.1 ppm / 3.6%
42				2.8 ppm / 3.6%
50				1.8 ppm / 3.6%
56				3.3 ppm / 3.6%
63				3.5 ppm / 3.6%
70				2.9 ppm / 3.6%
77				4.5 ppm / 3.6%
84				8.4 ppm / 3.6%
91				5.7 ppm / 3.6%
98				2.6 ppm / 3.6%
105				4.4 ppm / 3.6%
112				4.7 ppm / 3.6%
Animal ID W 254				
5				4.6 ppm / 3.9%
13				16.2 ppm / 3.9%
19				27.5 ppm / 3.9%

Note: Concentration data includes (concentration in reported units / percent fat).

Bateman et al., 1953

Journal of Agricultural and Food Chemistry. 1: 322

Day	Beef fat	Beef tissue	Milk fat	Whole milk
22				2.7 ppm / 3.9%
29				5.0 ppm / 3.9%
35				5.0 ppm / 3.9%
42				6.0 ppm / 3.9%
50				6.5 ppm / 3.9%
56				8.1 ppm / 3.9%
63				4.2 ppm / 3.9%
70				8.1 ppm / 3.9%
77				9.7 ppm / 3.9%
84				5.4 ppm / 3.9%
91				9.9 ppm / 3.9%
98				6.2 ppm / 3.9%
105				6.3 ppm / 3.9%
112				8.4 ppm / 3.9%
Animal ID HU 188				
5				5.6 ppm / 4.2%
13				11.3 ppm / 4.2%
19				10.1 ppm / 4.2%
29				18.4 ppm / 4.2%
35				20.6 ppm / 4.2%
42				21.7 ppm / 4.2%
50				21.2 ppm / 4.2%
56				26.7 ppm / 4.2%
63				20.9 ppm / 4.2%
70				23.7 ppm / 4.2%
77				29.2 ppm / 4.2%
84				27.0 ppm / 4.2%
91				14.1 ppm / 4.2%
98				12.3 ppm / 4.2%
105				17.1 ppm / 4.2%
112				11.7 ppm / 4.2%

Note: Concentration data includes (concentration in reported units / percent fat).

Bateman et al., 1953

Journal of Agricultural and Food Chemistry. 1: 322

Day	Beef fat	Beef tissue	Milk fat	Whole milk
Animal ID HU 132				
5				0.8 ppm / 3.5%
13				4.5 ppm / 3.5%
19				1.0 ppm / 3.5%
22				3.7 ppm / 3.5%
29				1.2 ppm / 3.5%
35				0.7 ppm / 3.5%
42				1.8 ppm / 3.5%
50				2.2 ppm / 3.5%
56				1.8 ppm / 3.5%
63				1.8 ppm / 3.5%
70				2.6 ppm / 3.5%
77				4.1 ppm / 3.5%
84				2.3 ppm / 3.5%
91				1.3 ppm / 3.5%
98				1.5 ppm / 3.5%
105				3.1 ppm / 3.5%
112				4.4 ppm / 3.5%
Animal ID A 145				
5				2.2 ppm / 3.4%
8				0.2 ppm / 3.4%
13				13.3 ppm / 3.4%
19				3.7 ppm / 3.4%
29				3.5 ppm / 3.4%
35				1.7 ppm / 3.4%
42				3.0 ppm / 3.4%
50				2.8 ppm / 3.4%
56				8.1 ppm / 3.4%
63				3.4 ppm / 3.4%
70				3.4 ppm / 3.4%
77				2.9 ppm / 3.4%

Note: Concentration data includes (concentration in reported units / percent fat).

Bateman et al., 1953

Journal of Agricultural and Food Chemistry. 1: 322

Day	Beef fat	Beef tissue	Milk fat	Whole milk
84				3.7 ppm / 3.4%
91				3.4 ppm / 3.4%
98				3.2 ppm / 3.4%
112				3.9 ppm / 3.4%

Note: Concentration data includes (concentration in reported units / percent fat).

Bjerke et al., 1972

Journal of Agricultural and Food Chemistry. 20: 963

Animals were exposed to the herbicides 2,4,5-T, 2,4-D, fenoprop (silvex), or MCPA. For each chemical, 3 cows were administered contaminated feed at increasing concentrations of 10, 30, 100, 300, and 1000 ppm. Animals were maintained for 14 days at each of the lower levels and for 21 days at 1000 ppm. Concentrations of the chemicals were measured in milk and cream. 2,4,5-T was not detected in milk at < 300 ppm or in cream at < 100 ppm. 2,4-D was not detected in milk or cream at < 1000 ppm. Silvex was not detected in milk or cream at < 1000 ppm. MCPA was not detected in milk at < 1000 ppm or in cream at < 300 ppm. Most detections were noted at the 1000 ppm level. Concentrations returned to levels below detection limits when contamainated feed was no longer administered.

2,4,5-T

Experiment Comments: Used data from the last day of dosing the highest concentration (i.e., 1000 ppm). Assumed feed intake is based on dry weight.

Analytical Method: Fortified feeds prepared by blending concentrates on silica gel. Analytical method was GLC with Sr electron capture detection on alumina column. The average recovery rate for 2,4,5-T was 92%.

Animal Data

Animal ID	Days Dosed	Lactation status	Description	Chemical Intake Rate	Feed Concentration	Feed Intake Rate	Weight
36	21	lactating	Holstein		1000 ppm	36 lbsDW/d	
7417	21	lactating	Holstein		1000 ppm	36 lbsDW/d	
30	21	lactating	Holstein		1000 ppm	36 lbsDW/d	
CREA	21	lactating	Holstein		1000 ppm	36 lbsDW/d	

Note: Represents cream composite data of the 3 animals

Media Concentrations

Day	Beef fat	Beef tissue	Milk fat	Whole milk
Animal ID 36				
2				0.31 ppm
5				0.44 ppm
9				0.42 ppm
12				0.37 ppm
16				0.23 ppm
17				0.33 ppm
18				0.49 ppm

Note: Concentration data includes (concentration in reported units / percent fat).

Bjerke et al., 1972

Journal of Agricultural and Food Chemistry. 20: 963

Day	Beef fat	Beef tissue	Milk fat	Whole milk
19				0.33 ppm
20				0.23 ppm
22				0.07 ppm
Animal ID 7417				
2				0.26 ppm
5				0.27 ppm
9				0.32 ppm
12				0.3 ppm
16				0.36 ppm
17				0.28 ppm
18				0.29 ppm
19				0.4 ppm
20				0.28 ppm
22				0.12 ppm
Animal ID 30				
2				0.78 ppm
5				0.54 ppm
9				0.44 ppm
12				0.29 ppm
16				1 ppm
17				0.75 ppm
18				0.38 ppm
19				0.35 ppm
20				0.32 ppm
22				0.12 ppm
Animal ID CREAM				
16				0.41 ppm / 45% (% fat from Ref. 33.)
17				0.25 ppm / 45% (% fat from Ref. 33.)
18				0.17 ppm / 45% (% fat from Ref. 33.)
19				0.27 ppm / 45% (% fat from Ref. 33.)

Note: Concentration data includes (concentration in reported units / percent fat).

Bjerke et al., 1972

Journal of Agricultural and Food Chemistry. 20: 963

Day	Beef fat	Beef tissue	Milk fat	Whole milk
20				0.21 ppm / 45% (% fat from Ref. 33.)

2,4-D

Experiment Comments: Used data from the last day of dosing the highest concentration (i.e., 1000 ppm). Assumed feed intake is based on dry weight.

Analytical Method: Fortified feeds prepared by blending concentrates on silica gel. Analytical method was GLC with Sr electron capture detection on alumina column. The average recovery rate for 2,4-D was 95%.

Animal Data

Animal ID	Days Dosed	Lactation status	Description	Chemical Intake Rate	Feed Concentration	Feed Intake Rate	Weight
22	21	lactating	Holstein		1000 ppm	36 lbsDW/d	
Note: Most of cow's data is at DL.							
7	21	lactating	Holstein		1000 ppm	36 lbsDW/d	
CREA	21	lactating	Holstein		1000 ppm	36 lbsDW/d	
Note: Animal ID represents composite cream data of 3 animals.							

Media Concentrations

Day	Beef fat	Beef tissue	Milk fat	Whole milk
Animal ID 22				
3				0.05 ppm
17				0.05 ppm
18				0.05 ppm
19				0.05 ppm
20				0.06 ppm
Animal ID 7				
3				0.06 ppm
10				0.08 ppm
17				0.11 ppm
18				0.12 ppm
19				0.09 ppm
20				0.12 ppm

Note: Concentration data includes (concentration in reported units / percent fat).

Bjerke et al., 1972

Journal of Agricultural and Food Chemistry. 20: 963

Day	Beef fat	Beef tissue	Milk fat	Whole milk
21				0.07 ppm
Animal ID CREAM				
17				0.12 ppm / 45% (% fat from Ref. 33.)
19				0.05 ppm / 45% (% fat from Ref. 33.)
20				0.06 ppm / 45% (% fat from Ref. 33.)

fenoprop (silvex)

Experiment Comments: Used data from the last day of dosing the highest concentration (i.e., 1000 ppm). Assumed feed intake is based on dry weight.

Analytical Method: Fortified feeds prepared by blending concentrates on silica gel. Analytical method was GLC with Sr electron capture detection on alumina column. The average recovery rate for fenoprop was 90%.

Animal Data

Animal ID	Days Dosed	Lactation status	Description	Chemical Intake Rate	Feed Concentration	Feed Intake Rate	Weight
96	21	lactating	Holstein		1000 ppm	36 lbsDW/d	
90	21	lactating	Holstein		1000 ppm	36 lbsDW/d	
9078	21	lactating	Holstein		1000 ppm	36 lbsDW/d	
CREA	21	lactating	Holstein		1000 ppm	36 lbsDW/d	

Note: This animal ID represents the composite fat samples of the 3 cows.

Media Concentrations

Day	Beef fat	Beef tissue	Milk fat	Whole milk
Animal ID 96				
3				0.06 ppm
6				0.06 ppm
10				0.07 ppm
13				0.05 ppm
17				0.08 ppm
18				0.08 ppm
19				0.05 ppm

Note: Concentration data includes (concentration in reported units / percent fat).

Bjerke et al., 1972

Journal of Agricultural and Food Chemistry. 20: 963

Day	Beef fat	Beef tissue	Milk fat	Whole milk
20				0.15 ppm
21				0.11 ppm
Animal ID 90				
3				0.05 ppm
6				0.12 ppm
10				0.06 ppm
13				0.09 ppm
17				0.08 ppm
18				0.06 ppm
19				0.11 ppm
20				0.12 ppm
21				0.09 ppm
Animal ID 9078				
3				0.12 ppm
6				0.1 ppm
10				0.14 ppm
13				0.14 ppm
17				0.18 ppm
18				0.18 ppm
19				0.14 ppm
20				0.19 ppm
21				0.23 ppm
Animal ID CREAM				
17				0.16 ppm / 45% (% fat from Ref. 33.)
18				0.16 ppm / 45% (% fat from Ref. 33.)
19				0.14 ppm / 45% (% fat from Ref. 33.)
20				0.19 ppm / 45% (% fat from Ref. 33.)
21				0.2 ppm / 45% (% fat from Ref. 33.)

Note: Concentration data includes (concentration in reported units / percent fat).

Bjerke et al., 1972

Journal of Agricultural and Food Chemistry. 20: 963

MCPA (2-methyl-4-chlorophenoxyacetic acid)

Experiment Comments: Used data from the last day of dosing the highest concentration (i.e., 1000 ppm). Assumed feed intake is based on dry weight. Cow 12 was replaced by cow 36 after the end of 300 ppm dose.

Analytical Method: Fortified feeds prepared by blending concentrates on silica gel. Microcoulometric gas chromatography for analysis. The average recovery rate for MCPA was 100%.

Animal Data

Animal ID	Days Dosed	Lactation status	Description	Chemical Intake Rate	Feed Concentration	Feed Intake Rate	Weight
22	21	lactating	Holstein		1000 ppm	36 lbsDW/d	
7	21	lactating	Holstein		1000 ppm	36 lbsDW/d	
36	21	lactating	Holstein		1000 ppm	36 lbsDW/d	

Media Concentrations

Day	Beef fat	Beef tissue	Milk fat	Whole milk
Animal ID 22				
3				0.06 ppm
13				0.06 ppm
Animal ID 7				
21				0.06 ppm
Animal ID 36				
18				0.06 ppm
19				0.05 ppm
20				0.07 ppm

Note: Concentration data includes (concentration in reported units / percent fat).

Bond et al., 1975

Bulletin of Environmental Contamination and Toxicology. 14: 25

A study was conducted to determine levels of mirex accumulating in milk over a 31 week time frame. Three cows were exposed to mirex at varying concentrations of 0, 0.01, and 1 ppm. Ten days after the experiment ended, residues in tissue fat were also analyzed. The authors concluded that, contrary to other reports, excessive residue of mirex did not accumulate in the milk and fatty tissues of the cows. No residue exceeding 0.08 ppm in milk samples was found over the 31 weeks of the study. Researchers hypothesized that some type of reaction must occur in the cows that metabolizes mirex, which does not occur in nonruminant animals.

mirex

Experiment Comments: A 16% protein grain ration was treated with concentrations of mirex in soybean oil.

Analytical Method: Used electron-capture gas chromatography. Recoveries of mirex in milk and fat samples were 86.9% and 78% respectively. Results are corrected for recovery.

Animal Data

Animal ID	Days Dosed	Lactation status	Description	Chemical Intake Rate	Feed Concentration	Feed Intake Rate	Weight
1	217	lactating			0.01 ppm		
2	217	lactating			1 ppm		

Media Concentrations

Day	Beef fat	Beef tissue	Milk fat	Whole milk
Animal ID 1				
7				0.02 ppm
56				0.01 ppm
112				0.02 ppm
140				0.01 ppm
168				0.02 ppm
196				0.01 ppm
217				0.01 ppm
Animal ID 2				
7				0.02 ppm
28				0.02 ppm
56				0.01 ppm
84				0.01 ppm

Note: Concentration data includes (concentration in reported units / percent fat).

Bond et al., 1975

Bulletin of Environmental Contamination and Toxicology. 14: 25

Day	Beef fat	Beef tissue	Milk fat	Whole milk
112				0.03 ppm
140				0.02 ppm
168				0.05 ppm
196				0.06 ppm
217				0.08 ppm

Note: Concentration data includes (concentration in reported units / percent fat).

Borzelleca et al., 1971

Toxicology and Applied Pharmacology. 18: 522

Toxicological and metabolic studies were conducted on pentachloronitrobezene (PCNB) using rats, dogs, and cows. Cows were fed 0, 0.1, 1, and 10 ppm. Three cows were fed at each dose for either 12 or 16 weeks. Milk samples were taken periodically for up to 56 days. Fat and tissue samples were taken at either 12 or 16 weeks. The only detections of PCNB in cows were suspected by the authors to be contamination. However, hexaclorobenzene (HCB) was detected in some samples. HCB was an impurity in the PCNB administered to animals. Specifically, HCB is a contaminant of PCNB at approximately 1.8%.

hexachlorobenzene

Experiment Comments: The milk data represent an average of three cows. The tissue data represent an average of two cows. The intake concentrations for HCB were calculated using the concentration for PCNB and multiplying it by 1.8%. No data were entered in experimental results for tissue concentrations at 0.0018 ppm, since these samples were only taken at 12 weeks. Other dose levels had samples at 12 and 16 weeks and it is clear that the 12 week data were not at steady state. Quantitative data are also available for two metabolites of PCNB.

Analytical Method: No information is provided on the analytical method.

Animal Data

Animal ID	Days Dosed	Lactation status	Description	Chemical Intake Rate	Feed Concentration	Feed Intake Rate	Weight
1	112	lactating	Holstein		0.0018 ppm		
Note: 3 cows in group							
2	112	lactating	Holstein		0.018 ppm		
Note: 3 cows in group							
3	112	lactating	Holstein		0.18 ppm		
Note: 3 cows in group							

Media Concentrations

Day	Beef fat	Beef tissue	Milk fat	Whole milk
Animal ID 1				
14	0.025 ppm	(brisket)		
28				0.001 ppm
49	0.006 ppm	(brisket)		
84	0.01 ppm	(subcutaneous)		
84	0.013 ppm	(abdominal)		

Note: Concentration data includes (concentration in reported units / percent fat).

Borzelleca et al., 1971

Toxicology and Applied Pharmacology. 18: 522

Day	Beef fat		Beef tissue		Milk fat	Whole milk
Animal ID 2						
14	0.010 ppm	(brisket)				0.001 ppm
21						0.001 ppm
28	0.059 ppm	(brisket)				0.002 ppm
35						0.002 ppm
42						0.003 ppm
49	0.054 ppm	(brisket)				0.001 ppm
56	0.010 ppm	(brisket)				0.003 ppm
84	0.046 ppm	(abdominal)				
84	0.03 ppm	(subcutaneous)	0.008 ppm	(muscle)		
112	0.102 ppm	(abdominal)				
112	0.079 ppm	(subcutaneous)	0.006 ppm	(muscle)		
Animal ID 3						
1						0.002 ppm
7	0.057 ppm	(brisket)				0.003 ppm
14	0.341 ppm	(brisket)				0.010 ppm
21						0.008 ppm
28	0.551 ppm	(brisket)				0.012 ppm
35						0.013 ppm
49	0.514 ppm	(brisket)				0.012 ppm
56	0.546 ppm	(brisket)				0.015 ppm
84	0.537 ppm	(subcutaneous)	0.015 ppm	(muscle)		
84	0.698 ppm	(abdominal)				
112	0.785 ppm	(abdominal)				
112	0.722 ppm	(subcutaneous)	0.70 ppm	(muscle)		

Note: Concentration data includes (concentration in reported units / percent fat).

Bovard et al., 1961

Journal of Animal Science. 20: 824

Yearling heifers fed contaminated apple pomace ad libitum for 104 days. The authors suggest that, based on work of other researchers, there are large differences between the uptake and excretion in calves versus mature cattle.

DDT

Experiment Comments: Feed was dried apple pomace. Animal data are an average of 6 cows. Media data are for individual cows.

Analytical Method: Used the colorimetric method of Schechter.

Animal Data

Animal ID	Days Dosed	Lactation status	Description	Chemical Intake Rate	Feed Concentration	Feed Intake Rate	Weight
8702	104	non-lactating	yearling crossbred heifer		103 ppm		
8706	104	non-lactating	yearling crossbred heifer		103 ppm		
8818	104	non-lactating	yearling crossbred heifer		103 ppm		
8701	104	non-lactating	yearling crossbred heifer		103 ppm		
8705	104	non-lactating	yearling crossbred heifers		103 ppm		
8710	104	non-lactating	yearling crossbred heifer		103 ppm		

Media Concentrations

Day	Beef fat	Beef tissue	Milk fat	Whole milk
Animal ID 8702				
1	4.4 ppm (omentum)			
79	67.0 ppm (omentum)			
274	29.0 ppm (omentum)			
463	8.5 ppm (omentum)			
711	7.2 ppm (omentum)			
Animal ID 8706				
1	4.0 ppm (omentum)			
79	87.0 ppm (omentum)			
274	42.0 ppm (omentum)			
463	13.5 ppm (omentum)			

Note: Concentration data includes (concentration in reported units / percent fat).

Bovard et al., 1961

Journal of Animal Science. 20: 824

Day	Beef fat	Beef tissue	Milk fat	Whole milk
711	13 ppm (omentum)			
Animal ID 8818				
1	3.3 ppm (omentum)			
79	73 ppm (omentum)			
274	26.0 ppm (omentum)			
463	9.5 ppm (omentum)			
711	8.1 ppm (omentum)			
Animal ID 8701				
1	3.5 ppm (omentum)			
23	36.0 ppm (omentum)			
184	35.0 ppm (omentum)			
360	13.6 ppm (omentum)			
711	7.3 ppm (omentum)			
Animal ID 8705				
1	4.2 ppm (omentum)			
23	61.0 ppm (omentum)			
184	61.0 ppm (omentum)			
360	16.6 ppm (omentum)			
560	8.5 ppm (omentum)	1 ppm (Inferred that the text on p. 825 is referring to this heifer based on the fat concentration reported.)		
Animal ID 8710				
1	3.8 ppm (omentum)			
23	51.0 ppm (omentum)			
184	53.0 ppm (omentum)			
360	17.0 ppm (omentum)			
613	7.8 ppm (omentum)			

Note: Concentration data includes (concentration in reported units / percent fat).

Boyer et al., 1992

Journal of Agricultural and Food Chemistry. 40: 914

Radiolabeled fenvalerate was administered to dairy cows and poultry via oral exposure for 21-28 days at doses of 0.11-0.15, 11, and 79 ppm daily. Rapid absorption and distribution of the fenvalerate residues in the milk (primarily in cream fraction), body fat, and muscle tissues were observed. Extensive metabolism was observed. Tissue residues dissipated rapidly once dosing stopped and, at the highest dose level, reached nondetect levels 4 days after the dosing period ended. In milk, concentrations appeared to reach steady state after 3-7 days of dietary exposure. The majority of the residues in milk samples were in the cream fraction (>95%). Skim milk residues were below quantitation (<0.01 ppm).

fenvalerate

Experiment Comments: The group of cows weighed 400-650 kg. 6 cows were dosed at 0.11-0.15 ppm, 3 cows at 11 ppm, and 5 cows at 79 ppm. Tissue residues are reported as ppm equivalents of the administered 14C-fenvalerate on a tissue wet weight basis. Chemical intake rates were estimated based on the total daily feed consumption of the cattle.

Analytical Method: Two preparations of radiolabeled fenvalerate were used, 1 labeled at the chlorophenyl and the other at the phenoxyphenyl moiety. Animals exposed at 0.11 and 11 ppm were administered the 14C-phenoxyphenyl fenvalerate. Animals at 0.15 ppm were administered the 14C-chlorophenyl fenvalerate. Animals at the 79 ppm dosing level were exposed to an equal mixture of both radiolabeled groups. Milk samples were taken twice daily and the whole milk was fractionated into cream and skim milk by centrifugation. Animals were sacrificed 12-24 h after the last day of feeding, and samples of quadriceps, gastrocnemius muscle, subcutaneous fat, mesenteric fat, kidney, and liver tissues were collected. Residues were analyzed by both radiometric and electron-gas capture liquid chromatographic procedures.

Animal Data

Animal ID	Days Dosed	Lactation status	Description	Chemical Intake Rate	Feed Concentration	Feed Intake Rate	Weight
1	21	lactating	Guernsey	0.13 mg/kgBW/d	2 ppm		
Note: Chemical intake rate is an average of 0.11,0.15 ppm. Group represents 6 cows.							
2	28	lactating	Guernsey	11 mg/kgBW/d	180 ppm		
Note: Group is an average of 3 cows.							
3	21	lactating	Guernsey	79 mg/kgBW/d	1140 ppm		
Note: Group is an average of 5 cows.							

Media Concentrations

Day	Beef fat	Beef tissue	Milk fat	Whole milk
Animal ID 1				
6				0.002 ppm

Note: Concentration data includes (concentration in reported units / percent fat).

Boyer et al., 1992

Journal of Agricultural and Food Chemistry. 40: 914

Day	Beef fat	Beef tissue	Milk fat	Whole milk
9				0.002 ppm
12				0.001 ppm
15				0.002 ppm
18				0.002 ppm
21	0.01 ppm			0.002 ppm
Animal ID 2				
1				0.02 ppm
3				0.07 ppm
6				0.09 ppm
9				0.07 ppm
12				0.08 ppm
15				0.08 ppm
18				0.07 ppm
21				0.08 ppm
24				0.06 ppm
27				0.06 ppm
28	0.74 ppm (Range reported was 0.68-0.79 ppm)	0.05 ppm (Range reported was 0.04-0.06 ppm)		
Animal ID 3				
1				0.11 ppm
3				0.49 ppm
5				0.48 ppm
7				0.52 ppm
9				0.52 ppm
11				0.51 ppm
13				0.52 ppm
15				0.5 ppm
17				0.59 ppm
19				0.55 ppm
21	2.6 ppm (Range reported was 1.8-3.4 ppm.)	0.3 ppm		0.5 ppm
22				0.31 ppm
23				0.12 ppm

Note: Concentration data includes (concentration in reported units / percent fat).

Boyer et al., 1992

Journal of Agricultural and Food Chemistry. 40: 914

Day	Beef fat	Beef tissue	Milk fat	Whole milk
24				0.06 ppm
31	2.5 ppm (Range reported was 2.2-2.7 ppm.)	0.16 ppm (Range reported was 0.14-0.18 ppm.)		
41	2.1 ppm (Range reported was 1.8-2.4 ppm.)	0.1 ppm (Range reported was 0.08-0.12 ppm.)		

Note: Concentration data includes (concentration in reported units / percent fat).

Bruce et al., 1965

Journal of Agricultural and Food Chemistry. 13: 63

Cows were fed heptachlor epoxide at the following levels: 0.2, 0.5, 1.5, 10, and 50 ppm. Two cows were fed at each level for 84 days. As a comparison, two cows were also fed 50 ppm of dieldrin and and another two cows were fed 100 ppm of DDT. The study found that heptachlor epoxide, once stored in the body fat during a feeding period, can continue to contaminate butterfat long after chemical intake has been discontinued (up to 714 days after contaminated feeding ended). It was observed that the lower the concentration in diet, the higher the percentage of intake was stored in butterfat.

heptachlor epoxide

Experiment Comments:

Analytical Method: The chemical was in acetone solution and mixed with feed of oats and corn ground. Analyses were conducted using a colorimetric method. Confirmatory samples were also conducted using paper chromatography and gas chromatography using electron capture detection. 90% of the samples had recoveries between 90% and 100%.

Animal Data

Animal ID	Days Dosed	Lactation status	Description	Chemical Intake Rate	Feed Concentration	Feed Intake Rate	Weight
1	84	lactating	Shorthorn dairy cow		0.2 ppm		
Note: Concentrations are average of 2 cows							
2	84	lactating	Shorthorn dairy cow		0.5 ppm		
Note: Concentrations are average of 2 cows							
3	84	lactating	Shorthorn dairy cow		1.5 ppm		
Note: Concentrations are average of 2 cows							
4	84	lactating	Shorthorn dairy cow		10 ppm		
Note: Concentrations are average of 2 cows							
	84	lactating	Shorthorn dairy cow		50 ppm		
Note: Concentrations are average of 2 cows							

Media Concentrations

Day	Beef fat	Beef tissue	Milk fat	Whole milk
Animal ID 1				
84			4.25 ppm (butterfat)	
Animal ID 2				
84	7.1 ppm (omental fat)		11.25 ppm (butterfat)	
Animal ID 3				
84	14.7 ppm (omental fat)		21.7 ppm (butterfat)	

Note: Concentration data includes (concentration in reported units / percent fat).

Bruce et al., 1965

Journal of Agricultural and Food Chemistry. 13: 63

Day	Beef fat	Beef tissue	Milk fat	Whole milk
Animal ID 4				
84	83.5 ppm (omental fat)		119.7 ppm (butterfat)	
Animal ID				
84	293.4 ppm (omental fat)		460 ppm (butterfat)	

Note: Concentration data includes (concentration in reported units / percent fat).

Claborn et al., 1960

Pesticide Residues in Meat and Milk A Research Report. ARS-33-63: 1

This is a summary article of studies on cattle and sheep that are exposed to insecticides either through spraying or ingestion. Experiments measured concentrations in either fat or milk over time. Fat samples are mostly from the omentum. These studies do not provide feed intake rates, only the concentration of contaminants in feed. This study is referenced by Kenaga (1980), but he only used data at the four week time interval even when the experiment was carried out further. It is more consistent with other data in this database to take the last reading from the study to get an estimate closer to a steady state concentration. Also, Kenaga only used data for certain concentrations administered and did not use BHC or toxaphene from this table. Travis and Arms (1988) references Claborn, et. al. (1960) directly for endrin, heptachlor, heptachlor epoxide, and toxaphene. However, Travis and Arms used other data that originated from the article as presented in Kenaga (1980). The studies based on ingestion are summarized below.

Beef cattle were feed in sufficient amounts to maintain good weight gain. Insecticide was applied in an acetone solution to feed. Study times ranged from 4 weeks to a maximum of 16 weeks, which is the maximum length of time cattle are kept on feed prior to slaughter.
Residues in fat were analyzed from steers and/or heifers for aldrin, chlordane, DDT, dieldrin, endrin, heptachlor, methoxychor, toxaphene, and lindane. Methoxychlor was the only insecticide that did not show residues in fat. This study references an earlier article, Radelleff (1950), as providing a description of the experiment (Table 7).

After this study was completed, the authors became aware that aldrin is metabolized and stored in fat as dieldrin and heptachlor is metabolized and stored in fat as heptachlor epoxide. Their initial analysis used total chlorine, so the data are still valid. They conducted an additional experiment using aldrin and found almost the entire amount of aldrin was oxidized and stored as dieldrin. They also looked at reduction in dieldrin in beef roast after cooking and found the concentration of dieldrin in the fat remained the same (Table 8).

The authors also conducted additional experiments on heptachlor and heptachlor epoxide intake. They conducted one feeding experiment where fat samples were analyzed for heptachlor epoxide. A experiment was also conducted using forage contaminated with both heptachlor and heptachlor epoxide. The results showed heptachlor epoxide caused residues about 10 times higher than heptachlor (Tables 9 & 10).

An experiment using contaminated feed given to dairy cattle was conducted for sevin, dicapthon, Bayer 22408, and toxaphene. Only toxaphene was found in milk (Table 18).

chlordane

Experiment Comments: Data from Table 7. For the 25 ppm study, the concentrations were checked 4 weeks after feeding ceased and concentrations remained near the concentrations at 8 weeks. For the 10 ppm study, no concentrations were taken after feeding ceased, so the metabolism is not clear.

Analytical Method: Benzene solvent used for extraction. Concentrations were determined based on total chlorine. Chlorine method entailed fat saponified, extracted, and titrated with silver nitrate.

Animal Data

Note: Concentration data includes (concentration in reported units / percent fat).

Claborn et al., 1960

Pesticide Residues in Meat and Milk A Research Report. ARS-33-63: 1

Animal ID	Days Dosed	Lactation status	Description	Chemical Intake Rate	Feed Concentration	Feed Intake Rate	Weight
1	112	non-lactating	Steer		25 ppm		
2	112	non-lactating	Heifer		25 ppm		
3	112	non-lactating	Heifer		10 ppm		
4	112	non-lactating	Heifer		10 ppm		
5	112	non-lactating	Heifer		10 ppm		
6	112	non-lactating	Heifer		10 ppm		
7	112	non-lactating	Heifer		10 ppm		

Media Concentrations

Day	Beef fat	Beef tissue	Milk fat	Whole milk
Animal ID 1				
28	9 ppm (omental)			
56	18 ppm (omental)			
140	16 ppm (omental)			
168	5 ppm (omental)			
Animal ID 2				
28	16 ppm (omental)			
56	19 ppm (omental)			
140	11 ppm (omental)			
168	5 ppm (omental)			
Animal ID 3				
28	8 ppm (omental)			
56	12 ppm (omental)			
84	9 ppm (omental)			
Animal ID 4				
28	11 ppm (omental)			
56	15 ppm (omental)			
84	10 ppm (omental)			
112	9 ppm (omental)			

Note: Concentration data includes (concentration in reported units / percent fat).

Claborn et al., 1960

Pesticide Residues in Meat and Milk A Research Report. ARS-33-63: 1

Day	Beef fat	Beef tissue	Milk fat	Whole milk
Animal ID 5				
28	12 ppm (omental)			
56	12 ppm (omental)			
84	10 ppm (omental)			
112	10 ppm (omental)			
Animal ID 6				
56	15 ppm (omental)			
84	11 ppm (omental)			
112	17 ppm (omental)			
Animal ID 7				
28	13 ppm (omental)			
56	11 ppm (omental)			
84	10 ppm (omental)			
112	9 ppm (omental)			

DDT

Experiment Comments: Data from Table 7 in Claborn et. al., (1960). Concentrations still existed in fat 16 and 24 weeks after feeding. All samples are omental fat.

Analytical Method: A chloroform solvent was used for extraction. Referenced the method of Schechter et. al. (colorimetric).

Animal Data

Animal ID	Days Dosed	Lactation status	Description	Chemical Intake Rate	Feed Concentration	Feed Intake Rate	Weight
1	112	non-lactating	Steer		25 ppm		
2	112	non-lactating	Steer		25 ppm		
3	112	non-lactating	Heifer		25 ppm		
4	112	non-lactating	Heifer		25 ppm		

Media Concentrations

Day	Beef fat	Beef tissue	Milk fat	Whole milk

Note: Concentration data includes (concentration in reported units / percent fat).

Claborn et al., 1960

Pesticide Residues in Meat and Milk A Research Report. ARS-33-63: 1

Day	Beef fat	Beef tissue	Milk fat	Whole milk
Animal ID 1				
56	29 ppm (omental)			
112	38 ppm (omental)			
140	11 ppm (omental)			
280	4.5 ppm (omental)			
Animal ID 2				
28	28 ppm (omental)			
84	45 ppm (omental)			
112	38 ppm (omental)			
140	23 ppm (omental)			
224	7.3 ppm (omental)			
280	3.9 ppm (omental)			
Animal ID 3				
56	40 ppm (omental)			
112	46 ppm (omental)			
140	26 ppm (omental)			
224	12 ppm (omental)			
280	6.8 ppm (omental)			
Animal ID 4				
28	15 ppm (omental)			
84	39 ppm (omental)			
112	37 ppm (omental)			
140	16 ppm (omental)			
224	13.7 ppm (omental)			
280	7.6 ppm (omental)			

dieldrin

Experiment Comments: Data from Table 7. Data were used in Kenaga but not Travis and Arms. Travis and Arms selected a different study for this chemical. Concentrations existed from 4 to 32 weeks after feeding ceased, depending on the concentrations.

Analytical Method: Benzene solvent used for extraction. Two methods are described: chlorine method and colorimetric methods. Chlorine method entailed fat saponified, extracted, and

Note: Concentration data includes (concentration in reported units / percent fat).

Claborn et al., 1960

Pesticide Residues in Meat and Milk A Research Report. ARS-33-63: 1

titrated with silver nitrate. Colorimetric methods involved saponification and extraction, followed by chromatographic columns. The detection limit is reported for the second method. It is not clear which method was used for this data.

Animal Data

Animal ID	Days Dosed	Lactation status	Description	Chemical Intake Rate	Feed Concentration	Feed Intake Rate	Weight
1	56	non-lactating	Steer		25 ppm		
2	56	non-lactating	Heifer		25 ppm		
3	112	non-lactating	Steer		10 ppm		
4	112	non-lactating	Steer		10 ppm		
5	112	non-lactating	Heifer		10 ppm		
6	112	non-lactating	Heifer		10 ppm		
7	112	non-lactating	Steer		2.5 ppm		
8	112	non-lactating	Steer		2.5 ppm		
9	112	non-lactating	Heifer		2.5 ppm		
10	112	non-lactating	Heifer		2.5 ppm		
11	112	non-lactating	Steer		1 ppm		
12	112	non-lactating	Steer		1 ppm		

Media Concentrations

Day	Beef fat		Beef tissue	Milk fat	Whole milk
Animal ID 1					
28	70 ppm	(omental)			
56	63 ppm	(omental)			
140	68 ppm	(omental)			
168	55 ppm	(omental)			
252	25 ppm	(omental)			
336	10 ppm	(omental)			
Animal ID 2					
28	80 ppm	(omental)			
56	86 ppm	(omental)			
140	67 ppm	(omental)			

Note: Concentration data includes (concentration in reported units / percent fat).

Claborn et al., 1960

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Day	Beef fat	Beef tissue	Milk fat	Whole milk
168	36 ppm (omental)			
252	15 ppm (omental)			
336	9 ppm (omental)			
Animal ID 3				
56	29 ppm (omental)			
112	48 ppm (omental)			
140	29 ppm (omental)			
224	19 ppm (omental)			
280	9 ppm (omental)			
Animal ID 4				
28	18 ppm (omental)			
84	37 ppm (omental)			
112	45 ppm (omental)			
140	22 ppm (omental)			
224	16 ppm (omental)			
280	8 ppm (omental)			
Animal ID 5				
56	22 ppm (omental)			
112	42 ppm (omental)			
140	13 ppm (omental)			
224	11 ppm (omental)			
280	5 ppm (omental)			
Animal ID 6				
28	14 ppm (omental)			
84	33 ppm (omental)			
112	39 ppm (omental)			
140	15 ppm (omental)			
224	13 ppm (omental)			
280	9 ppm (omental)			
Animal ID 7				
28	6.9 ppm (omental)			

Note: Concentration data includes (concentration in reported units / percent fat).

Claborn et al., 1960

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Day	Beef fat	Beef tissue	Milk fat	Whole milk
84	9.4 ppm (omental)			
112	11.3 ppm (omental)			
140	5.2 ppm (omental)			
Animal ID 8				
56	13.4 ppm (omental)			
112	14.8 ppm (omental)			
140	7.3 ppm (omental)			
Animal ID 9				
28	7.1 ppm (omental)			
84	11.1 ppm (omental)			
112	12.3 ppm (omental)			
140	4.4 ppm (omental)			
Animal ID 10				
56	10.5 ppm (omental)			
112	18.9 ppm (omental)			
140	6.0 ppm (omental)			
Animal ID 11				
28	4.2 ppm (omental)			
84	6.0 ppm (omental)			
140	1.9 ppm (omental)			
Animal ID 12				
56	5.3 ppm (omental)			
112	5.5 ppm (omental)			
140	2.4 ppm (omental)			

dieldrin

Experiment Comments: Data from Table 7. The chemical was originally fed as aldrin, which is metabolized to dieldrin. However, these concentrations were determined based on total chlorine so they should still be valid.

Analytical Method: Benzene solvent used for extraction. Concentrations were determined based on total chlorine. Chlorine method entailed fat saponified, extracted, and titrated with silver nitrate.

Note: Concentration data includes (concentration in reported units / percent fat).

Claborn et al., 1960

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Animal Data

Animal ID	Days Dosed	Lactation status	Description	Chemical Intake Rate	Feed Concentration	Feed Intake Rate	Weight
1	56	non-lactating	Steer		25 ppm		
2	56	non-lactating	Steer		25 ppm		
3	112	non-lactating	Heifer		10 ppm		
4	112	non-lactating	Heifer		10 ppm		
5	112	non-lactating	Heifer		10 ppm		
6	112	non-lactating	Heifer		10 ppm		
7	112	non-lactating	Heifer		10 ppm		

Media Concentrations

Day	Beef fat	Beef tissue	Milk fat	Whole milk
Animal ID 1				
56	79 ppm (omental)			
168	36 ppm (omental)			
Animal ID 2				
56	77 ppm (omental)			
140	56 ppm (omental)			
168	36 ppm (omental)			
252	21 ppm (omental)			
336	7 ppm (omental)			
Animal ID 3				
28	34 ppm (omental)			
56	46 ppm (omental)			
112	59 ppm (omental)			
Animal ID 4				
28	29 ppm (omental)			
56	48 ppm (omental)			
84	51 ppm (omental)			
112	58 ppm (omental)			

Note: Concentration data includes (concentration in reported units / percent fat).

Claborn et al., 1960

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Day	Beef fat	Beef tissue	Milk fat	Whole milk
Animal ID 5				
28	30 ppm (omental)			
56	38 ppm (omental)			
84	41 ppm (omental)			
112	41 ppm (omental)			
Animal ID 6				
28	37 ppm (omental)			
56	35 ppm (omental)			
84	48 ppm (omental)			
112	52 ppm (omental)			
Animal ID 7				
28	36 ppm (omental)			
56	41 ppm (omental)			
84	41 ppm (omental)			
112	38 ppm (omental)			

dieldrin

Experiment Comments: Data from Table 8. The chemical was originally fed as aldrin, which is metabolized to dieldrin. Samples were also taken for renal fat, liver, and kidney. Interestingly, they cooked beef roast from this study and found no significant change in the concentration of dieldrin in a sample of fat from the roasting pan after 3 hours at 350 degrees F. The cooked fat contained the same concentration as the uncooked fat.

Analytical Method: Benzene solvent used for extraction. Analyzed by a specific colorimetric method. Colorimetric methods involved saponification and extraction, followed by chromatographic columns. The detection limit is reported from Table 8 in Claborn, et. al. (1960).

Animal Data

Animal ID	Days Dosed	Lactation status	Description	Chemical Intake Rate	Feed Concentration	Feed Intake Rate	Weight
1	84	non-lactating	Steer		0.25 ppm		
2	84	non-lactating	Steer		0.25 ppm		
3	84	non-lactating	Steer		0.75 ppm		
4	84	non-lactating	Steer		0.75 ppm		

Note: Concentration data includes (concentration in reported units / percent fat).

Claborn et al., 1960

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5	84	non-lactating	Steer	2.0 ppm
6	84	non-lactating	Steer	2.0 ppm
7	84	non-lactating	Steer	10.0 ppm
8	84	non-lactating	Steer	10.0 ppm

Media Concentrations

Day	Beef fat		Beef tissue		Milk fat	Whole milk
Animal ID 1						
84	0.99 ppm	(body fat)				
Animal ID 2						
126	0.68 ppm	(body fat)				
Animal ID 3						
84	3.40 ppm	(body fat)	0.07 ppm	(muscle)		
Animal ID 4						
126	2.10 ppm	(body fat)				
Animal ID 5						
84	8.50 ppm	(body fat)	0.13 ppm	(muscle)		
Animal ID 6						
84	5.10 ppm	(body fat)	0.12 ppm	(muscle)		
Animal ID 7						
84	39.2 ppm	(body fat)	0.72 ppm	(muscle)		
Animal ID 8						
84	17.8 ppm	(body fat)	0.17 ppm	(muscle)		

endrin

Experiment Comments: Data from Table 7. Concentrations were not sampled after feeding ceased.

Analytical Method: Benzene solvent used for extraction. Concentrations are based on a total chlorine method which entailed saponification, extraction, and titration with silver nitrate.

Animal Data

Note: Concentration data includes (concentration in reported units / percent fat).

Claborn et al., 1960

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Animal ID	Days Dosed	Lactation status	Description	Chemical Intake Rate	Feed Concentration	Feed Intake Rate	Weight
1	112	non-lactating	Steer		5 ppm		
2	112	non-lactating	Steer		5 ppm		
3	112	non-lactating	Heifer		5 ppm		
4	112	non-lactating	Heifer		5 ppm		
5	112	non-lactating	Steer		2.5 ppm		
6	112	non-lactating	Steer		2.5 ppm		
7	112	non-lactating	Heifer		2.5 ppm		

Note: Copy was not clear for 112 days. It looked like it may have been zero but the number below was half missing so the 84 day concentration was used which was a clear number.

8	112	non-lactating	Heifer		2.5 ppm		

Media Concentrations

Day	Beef fat		Beef tissue	Milk fat	Whole milk
Animal ID 1					
28	1.4 ppm	(omental)			
84	2.5 ppm	(omental)			
112	1.9 ppm	(omental)			
Animal ID 2					
56	2.2 ppm	(omental)			
Animal ID 3					
28	1.2 ppm	(omental)			
84	2.4 ppm	(omental)			
112	1.3 ppm	(omental)			
Animal ID 4					
56	0.8 ppm	(omental)			
112	3.6 ppm	(omental)			
Animal ID 5					
28	0.9 ppm	(omental)			
84	0.4 ppm	(omental)			
112	1.6 ppm	(omental)			

Note: Concentration data includes (concentration in reported units / percent fat).

Claborn et al., 1960

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Day	Beef fat	Beef tissue	Milk fat	Whole milk
Animal ID 6				
56	2.8 ppm (omental)			
112	1.0 ppm (omental)			
Animal ID 7				
28	1.6 ppm (omental)			
84	1.3 ppm (omental)			
Animal ID 8				
56	2.3 ppm (omental)			
112	0.6 ppm (omental)			

heptachlor epoxide

Experiment Comments: Data from Table 7. Cattle were fed heptachlor, which metabolizes into heptachlor epoxide. Analysis was for total chlorine so all the concentration data are actually for heptachlor epoxide. Concentrations were not very high during feeding, but some concentrations did remain four weeks after feeding ceased for the 10 ppm group. For the 2.5 ppm group, concentrations were not analyzed after feeding ceased.

Analytical Method: It is unclear what method was used. It is first stated that benzene solvent was used for extraction, followed by either the chlorine method or colorimetric method. It is also stated that the chemical was extracted with nitromethane. The detection limit is reported for the second method.

Animal Data

Animal ID	Days Dosed	Lactation status	Description	Chemical Intake Rate	Feed Concentration	Feed Intake Rate	Weight
1	112	non-lactating	Steer		10 ppm		
2	112	non-lactating	Steer		10 ppm		
3	112	non-lactating	Heifer		10 ppm		
4	112	non-lactating	Steer		2.5 ppm		
5	112	non-lactating	Steer		2.5 ppm		
6	112	non-lactating	Heifer		2.5 ppm		
Note: Concentration at 112 days was zero so used concentration at 84 days to get a value.							
7	112	non-lactating	Heifer		2.5 ppm		
Note: Concentration at 112 days was zero so used concentration at 56 days to get a value.							

Media Concentrations

Note: Concentration data includes (concentration in reported units / percent fat).

Claborn et al., 1960

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Day	Beef fat	Beef tissue	Milk fat	Whole milk
Animal ID 1				
28	5 ppm (omental)			
84	5 ppm (omental)			
112	4 ppm (omental)			
140	1 ppm (omental)			
Animal ID 2				
28	3 ppm (omental)			
84	2 ppm (omental)			
112	2 ppm (omental)			
Animal ID 3				
56	8 ppm (omental)			
112	9 ppm (omental)			
140	4 ppm (omental)			
Animal ID 4				
28	1.5 ppm (omental)			
112	0.5 ppm (omental)			
Animal ID 5				
56	0.9 ppm (omental)			
Animal ID 6				
28	1.2 ppm (omental)			
84	1.4 ppm (omental)			
Animal ID 7				
56	0.5 ppm (omental)			

heptachlor epoxide

Experiment Comments: Data from Table 9. Cattle were fed heptachlor, which metabolizes into heptachlor epoxide. Thus, all the concentration data are actually for heptachlor epoxide. The source is not clear as to whether the animals were lactating or not; it was assumed they were nonlactating.

Analytical Method: Data are based on a colorimetric method.

Note: Concentration data includes (concentration in reported units / percent fat).

Claborn et al., 1960

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Animal Data

Animal ID	Days Dosed	Lactation status	Description	Chemical Intake Rate	Feed Concentration	Feed Intake Rate	Weight
1	112	non-lactating			3.75 ppm		
2	70	non-lactating			7.5 ppm		
3	56	non-lactating			15 ppm		
4	56	non-lactating			30 ppm		
5	70	non-lactating			30 ppm		
6	56	non-lactating			60 ppm		
7	70	non-lactating			60 ppm		
8	98	non-lactating			60 ppm		
9	112	non-lactating			60 ppm		

Media Concentrations

Day	Beef fat	Beef tissue	Milk fat	Whole milk
Animal ID 1				
112	2.7 ppm (omental)			
Animal ID 2				
70	2.9 ppm (omental)			
Animal ID 3				
56	6.1 ppm (omental)			
Animal ID 4				
56	13.8 ppm (omental)			
Animal ID 5				
70	16.1 ppm (omental)			
Animal ID 6				
56	34.1 ppm (omental)			
Animal ID 7				
70	38.8 ppm (omental)			

Note: Concentration data includes (concentration in reported units / percent fat).

Claborn et al., 1960

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Day	Beef fat	Beef tissue	Milk fat	Whole milk
Animal ID 8				
98	59.8 ppm (omental)			
Animal ID 9				
112	61.9 ppm (omental)			

heptachlor epoxide

Experiment Comments: Data from Table 10. Cattle were originally fed heptachlor, which metabolizes into heptachlor epoxide. Thus, all the concentration data are for heptachlor epoxide.

Analytical Method: Benzene solvent used for extraction. Used a colorimetric method, which involved saponification and extraction, followed by chromatographic columns.

Animal Data

Animal ID	Days Dosed	Lactation status	Description	Chemical Intake Rate	Feed Concentration	Feed Intake Rate	Weight
1	56	non-lactating	steer		3.75 ppm		
2	56	non-lactating	heifer		3.75 ppm		

Media Concentrations

Day	Beef fat	Beef tissue	Milk fat	Whole milk
Animal ID 1				
28	0.8 ppm (omental)			
56	1.53 ppm (omental)			
140	1.03 ppm (omental)			
168	0.85 ppm (omental)			
Animal ID 2				
28	0.54 ppm (omental)			
56	1.11 ppm (omental)			
140	0.97 ppm (omental)			

heptachlor epoxide

Experiment Comments: Data from Table 10. Concentrations remained up to eight weeks after feeding ceased.

Note: Concentration data includes (concentration in reported units / percent fat).

Claborn et al., 1960

Pesticide Residues in Meat and Milk A Research Report. ARS-33-63: 1

Analytical Method: A colorimetric method was used. Benzene solvent used for extraction. The colorimetric method involved saponification and extraction, followed by chromatographic columns.

Animal Data

Animal ID	Days Dosed	Lactation status	Description	Chemical Intake Rate	Feed Concentration	Feed Intake Rate	Weight
1	56	non-lactating	Steer		1.0 ppm		
2	56	non-lactating	Heifer		1.0 ppm		
3	56	non-lactating	Steer		3.75 ppm		
4	56	non-lactating	Heifer		3.75 ppm		

Media Concentrations

Day	Beef fat	Beef tissue	Milk fat	Whole milk
Animal ID 1				
28	2.04 ppm (omental)			
56	5.08 ppm (omental)			
140	3.07 ppm (omental)			
168	2.86 ppm (omental)			
Animal ID 2				
28	1.65 ppm (omental)			
56	3.33 ppm (omental)			
140	2.02 ppm (omental)			
168	1.95 ppm (omental)			
Animal ID 3				
28	7.51 ppm (omental)			
56	15.4 ppm (omental)			
140	12.7 ppm (omental)			
168	7.5 ppm (omental)			
Animal ID 4				
28	7.32 ppm (omental)			
56	13.3 ppm (omental)			
140	7.6 ppm (omental)			

Note: Concentration data includes (concentration in reported units / percent fat).

Claborn et al., 1960

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Day	Beef fat	Beef tissue	Milk fat	Whole milk
168	5.5 ppm (omental)			

lindane

Experiment Comments: Data from Table 7. Some small concentrations were detected 20 weeks after feeding ceased. Data from this study seem very suspect. The concentrations at week 16 are significantly lower than concentrations from week 12. This analysis was performed by a different set of researchers than Claborn, et. al. (1960) . It is suspected that the data were somehow misreported, and week 12 was the last week of dosing.

Analytical Method: It is stated that n-hexane was used for extraction and later that chloroform was used. Lindane was determined by a spectrophotometric method.

Animal Data

Animal ID	Days Dosed	Lactation status	Description	Chemical Intake Rate	Feed Concentration	Feed Intake Rate	Weight
1	112	non-lactating	Heifer		1 ppm		
2	112	non-lactating	Steer		1 ppm		
3	112	non-lactating	Heifer		10 ppm		
4	112	non-lactating	Steer		10 ppm		
5	112	non-lactating	Heifer		100 ppm		
6	112	non-lactating	Steer		100 ppm		

Media Concentrations

Day	Beef fat	Beef tissue	Milk fat	Whole milk
Animal ID 1				
56	1 ppm (omental)			
84	1.3 ppm (Weeks 12 and 16 may be reversed in paper.)			
112	1.6 ppm (Weeks 12 and 16 may be reversed in paper.)			
168	0.9 ppm (omental)			
Animal ID 2				
28	0.3 ppm (omental)			
56	0.8 ppm (omental)			
84	2 ppm (Weeks 12 and 16 may be reversed in paper.)			

Note: Concentration data includes (concentration in reported units / percent fat).

Claborn et al., 1960

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Day	Beef fat	Beef tissue	Milk fat	Whole milk
112	0.4 ppm (Weeks 12 and 16 may be reversed in paper.)			
140	0.5 ppm (omental)			
252	0.6 ppm (omental)			
Animal ID 3				
28	3.5 ppm (omental)			
56	6.9 ppm (omental)			
84	7.6 ppm (Weeks 12 and 16 may be reversed in paper.)			
112	2.0 ppm (Weeks 12 and 16 may be reversed in paper.)			
168	0.6 ppm (omental)			
Animal ID 4				
56	6.7 ppm (omental)			
84	8.3 ppm (Weeks 12 and 16 may be reversed in paper.)			
112	4.2 ppm (Weeks 12 and 16 may be reversed in paper.)			
140	4.9 ppm (omental)			
Animal ID 5				
28	59.0 ppm (omental)			
56	76 ppm (omental)			
84	86 ppm (Weeks 12 and 16 may be reversed in paper.)			
112	40 ppm (Weeks 12 and 16 may be reversed in paper.)			
168	3.7 ppm (omental)			
252	1 ppm (omental)			
Animal ID 6				
28	70 ppm (omental)			
56	76 ppm (omental)			
84	111 ppm (Weeks 12 and 16 may be reversed in paper.)			
112	60 ppm (Weeks 12 and 16 may be reversed in paper.)			
140	12 ppm (omental)			

Note: Concentration data includes (concentration in reported units / percent fat).

Claborn et al., 1960

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Day	Beef fat	Beef tissue	Milk fat	Whole milk
252	1.3 ppm (omental)			

toxaphene

Experiment Comments: Data from Table 18. The table included data each week up to eight weeks and three weeks after feeding ceased. Maximum residues were reach by the end of the first or second week.

Analytical Method: Benzene solvent used for extraction. Concentrations were determined based on a total chlorine method.

Animal Data

Animal ID	Days Dosed	Lactation status	Description	Chemical Intake Rate	Feed Concentration	Feed Intake Rate	Weight
3	56	lactating			20 ppm		
4	56	lactating			20 ppm		
5	56	lactating			20 ppm		
6	56	lactating			60 ppm		
7	56	lactating			60 ppm		
8	56	lactating			60 ppm		
9	56	lactating			100 ppm		
10	56	lactating			100 ppm		
11	56	lactating			100 ppm		
12	56	lactating			140 ppm		
13	56	lactating			140 ppm		
14	56	lactating			140 ppm		

Media Concentrations

Day	Beef fat	Beef tissue	Milk fat	Whole milk
Animal ID 3				
7				0.17 ppm
14				0.24 ppm
21				0.24 ppm
28				0.31 ppm
35				0.29 ppm

Note: Concentration data includes (concentration in reported units / percent fat).

Claborn et al., 1960

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Day	Beef fat	Beef tissue	Milk fat	Whole milk
42				0.33 ppm
49				0.25 ppm
56				0.21 ppm
63				0.10 ppm
70				0.01 ppm
Animal ID 4				
7				0.26 ppm
14				0.31 ppm
21				0.31 ppm
28				0.41 ppm
35				0.34 ppm
42				0.42 ppm
49				0.31 ppm
56				0.25 ppm
63				0.06 ppm
70				0.04 ppm
Animal ID 5				
7				0.16 ppm
14				0.24 ppm
21				0.24 ppm
28				0.35 ppm
35				0.35 ppm
42				0.35 ppm
49				0.26 ppm
56				0.24 ppm
63				0.06 ppm
70				0.02 ppm
Animal ID 6				
7				0.61 ppm
14				0.65 ppm
21				0.74 ppm

Note: Concentration data includes (concentration in reported units / percent fat).

Claborn et al., 1960

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Day	Beef fat	Beef tissue	Milk fat	Whole milk
28				0.70 ppm
35				0.67 ppm
42				0.68 ppm
49				0.47 ppm
56				0.44 ppm
63				0.08 ppm
70				0.05 ppm
77				0.04 ppm
Animal ID 7				
7				0.61 ppm
14				0.69 ppm
21				0.87 ppm
28				0.66 ppm
35				0.69 ppm
42				0.77 ppm
49				0.53 ppm
56				0.52 ppm
63				0.14 ppm
70				0.11 ppm
77				0.09 ppm
Animal ID 8				
7				0.47 ppm
14				0.50 ppm
21				0.65 ppm
28				0.67 ppm
35				0.53 ppm
42				0.69 ppm
49				0.48 ppm
56				0.48 ppm
63				0.16 ppm
70				0.13 ppm
77				0.09 ppm

Note: Concentration data includes (concentration in reported units / percent fat).

Claborn et al., 1960

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Day	Beef fat	Beef tissue	Milk fat	Whole milk
Animal ID 9				
7				0.90 ppm
14				0.99 ppm
21				0.92 ppm
28				1.06 ppm
35				0.87 ppm
42				0.96 ppm
49				0.93 ppm
56				0.90 ppm
63				0.11 ppm
70				0.05 ppm
77				0.08 ppm
Animal ID 10				
7				0.87 ppm
14				1 ppm
21				1.08 ppm
28				1.19 ppm
35				1.13 ppm
42				1.04 ppm
49				0.97 ppm
56				0.96 ppm
63				0.18 ppm
70				0.16 ppm
77				0.15 ppm
Animal ID 11				
7				0.85 ppm
14				1.05 ppm
21				1.04 ppm
28				1.19 ppm
35				0.92 ppm
42				0.89 ppm

Note: Concentration data includes (concentration in reported units / percent fat).

Claborn et al., 1960

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Day	Beef fat	Beef tissue	Milk fat	Whole milk
49				0.68 ppm
56				0.88 ppm
63				0.17 ppm
70				0.18 ppm
Animal ID 12				
7				1.46 ppm
14				1.56 ppm
21				1.68 ppm
28				1.75 ppm
35				1.31 ppm
42				1.39 ppm
49				1.36 ppm
56				1.52 ppm
63				0.19 ppm
70				0.17 ppm
77				0.12 ppm
Animal ID 13				
7				1.13 ppm
14				1.09 ppm
21				1.4 ppm
28				1.45 ppm
35				1.23 ppm
42				1.23 ppm
49				1.53 ppm
56				1.44 ppm
63				0.30 ppm
70				0.22 ppm
77				0.21 ppm
Animal ID 14				
7				1.74 ppm
14				2.36 ppm

Note: Concentration data includes (concentration in reported units / percent fat).

Claborn et al., 1960

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Day	Beef fat	Beef tissue	Milk fat	Whole milk
21				2.32 ppm
28				2.47 ppm
35				1.96 ppm
42				2.31 ppm
49				2.24 ppm
56				2.51 ppm
63				0.46 ppm
70				0.80 ppm
77				0.26 ppm

toxaphene

Experiment Comments: Data from Table 7.

Analytical Method: Benzene solvent used for extraction. Concentrations were determined based on a total chlorine method, which entailed saponification, extraction, and titration with silver nitrate.

Animal Data

Animal ID	Days Dosed	Lactation status	Description	Chemical Intake Rate	Feed Concentration	Feed Intake Rate	Weight
1	112	non-lactating	Steer		100 ppm		
2	112	non-lactating	Steer		100 ppm		
3	112	non-lactating	Steer		100 ppm		
4	112	non-lactating	Heifer		100 ppm		
5	112	non-lactating	Heifer		100 ppm		
6	112	non-lactating	Heifer		25 ppm		
7	112	non-lactating	Heifer		25 ppm		
8	112	non-lactating	Heifer		25 ppm		
9	112	non-lactating	Steer		25 ppm		
10	112	non-lactating	Steer		25 ppm		

Media Concentrations

Day	Beef fat	Beef tissue	Milk fat	Whole milk

Note: Concentration data includes (concentration in reported units / percent fat).

Claborn et al., 1960

Pesticide Residues in Meat and Milk A Research Report. ARS-33-63: 1

Day	Beef fat	Beef tissue	Milk fat	Whole milk
Animal ID 1				
28	25 ppm (omental)			
56	27 ppm (omental)			
84	36 ppm (omental)			
112	37 ppm (omental)			
140	10 ppm (omental)			
Animal ID 2				
56	45 ppm (omental)			
84	43 ppm (omental)			
112	52 ppm (omental)			
140	29 ppm (omental)			
168	9 ppm (omental)			
Animal ID 3				
28	30 ppm (omental)			
56	34 ppm (omental)			
84	29 ppm (omental)			
112	29 ppm (omental)			
140	24 ppm (omental)			
Animal ID 4				
28	23 ppm (omental)			
56	27 ppm (omental)			
84	25 ppm (omental)			
112	33 ppm (omental)			
140	10 ppm (omental)			
168	3 ppm (omental)			
Animal ID 5				
28	26 ppm (omental)			
56	35 ppm (omental)			
84	33 ppm (omental)			
112	39 ppm (omental)			

Note: Concentration data includes (concentration in reported units / percent fat).

Claborn et al., 1960

Pesticide Residues in Meat and Milk A Research Report. ARS-33-63: 1

Day	Beef fat	Beef tissue	Milk fat	Whole milk
140	15 ppm (omental)			
Animal ID 6				
28	2 ppm (omental)			
56	4 ppm (omental)			
84	11 ppm (omental)			
112	16 ppm (omental)			
Animal ID 7				
28	3 ppm (omental)			
56	4 ppm (omental)			
84	7 ppm (omental)			
112	12 ppm (omental)			
Animal ID 8				
28	1 ppm (omental)			
56	9 ppm (omental)			
84	9 ppm (omental)			
112	16 ppm (omental)			
Animal ID 9				
28	4 ppm (omental)			
56	4 ppm (omental)			
84	11 ppm (omental)			
112	8 ppm (omental)			
Animal ID 10				
28	1 ppm (omental)			
56	1 ppm (omental)			
84	12 ppm (omental)			
112	9 ppm (omental)			

Note: Concentration data includes (concentration in reported units / percent fat).

Claborn et al., 1963

Journal of Agricultural and Food Chemistry. 11: 286

Oil solutions of toxaphene were fed to dairy cows for 8 weeks. The insecticide was excreted into milk at feed concentrations as low as 20 ppm. Residues decreased rapidly after feeding stopped.

toxaphene

Experiment Comments: Some cows suffered mastititis during study period. The beef data is randomly assigned to a cow ID representative of each dosing level because investigators did not specify an animal in the paper.

Analytical Method: Administered toxaphene to feed in an acetone solution. Used total chlorine methods to measure residues on hay and in milk. Further detail provided in article. Recoveries were always > 90%.

Animal Data

Animal ID	Days Dosed	Lactation status	Description	Chemical Intake Rate	Feed Concentration	Feed Intake Rate	Weight
3	56	lactating	jersey		20 ppm		
6	56	lactating	jersey		60 ppm		
9	56	lactating	jersey		100 ppm		
12	56	lactating	jersey		140 ppm		
4	56	lactating	jersey		20 ppm		
5	56	lactating	jersey		20 ppm		
7	56	lactating	jersey		60 ppm		
8	56	lactating	jersey		60 ppm		
10	56	lactating	jersey		100 ppm		
11	56	lactating	jersey		100 ppm		
13	56	lactating	jersey		140 ppm		
14	56	lactating	jersey		140 ppm		

Media Concentrations

Day	Beef fat	Beef tissue	Milk fat	Whole milk
Animal ID 3				
7				0.17 ppm / 4%
14				0.24 ppm / 4%
21				0.24 ppm / 4%

Note: Concentration data includes (concentration in reported units / percent fat).

Claborn et al., 1963

Journal of Agricultural and Food Chemistry. 11: 286

Day	Beef fat	Beef tissue	Milk fat	Whole milk
28				0.31 ppm / 4%
35				0.29 ppm / 4%
42				0.33 ppm / 4%
49				0.25 ppm / 4%
56				0.21 ppm / 4%
63				0.1 ppm / 4%
70				0.01 ppm / 4%
Animal ID 6				
7				0.61 ppm / 4%
14				0.65 ppm / 4%
21				0.74 ppm / 4%
28				0.7 ppm / 4%
35				0.67 ppm / 4%
42				0.68 ppm / 4%
49				0.47 ppm / 4%
56				0.44 ppm / 4%
57	8.4 ppm (omental)			
63				0.08 ppm / 4%
70				0.05 ppm / 4%
77				0.04 ppm / 4%
Animal ID 9				
7				0.9 ppm / 4%
14				0.99 ppm / 4%
21				0.92 ppm / 4%
28				1.06 ppm / 4%
35				0.87 ppm / 4%
42				0.96 ppm / 4%
49				0.93 ppm / 4%
56				0.90 ppm / 4%
57	14.3 ppm (omental)			
63				0.11 ppm / 4%
70				0.05 ppm / 4%

Note: Concentration data includes (concentration in reported units / percent fat).

Claborn et al., 1963

Journal of Agricultural and Food Chemistry. 11: 286

Day	Beef fat	Beef tissue	Milk fat	Whole milk
77				0.08 ppm / 4%
Animal ID 12				
7				1.46 ppm / 4%
14				1.56 ppm / 4%
21				1.68 ppm / 4%
28				1.75 ppm / 4%
35				1.31 ppm / 4%
42				1.39 ppm / 4%
49				1.36 ppm / 4%
56				1.52 ppm / 4%
57	24.3 ppm (omental)			
63				0.19 ppm / 4%
70				0.17 ppm / 4%
77				0.12 ppm / 4%
Animal ID 4				
7				0.26 ppm / 4%
14				0.31 ppm / 4%
21				0.31 ppm / 4%
28				0.41 ppm / 4%
35				0.24 ppm / 4%
42				0.42 ppm / 4%
49				0.31 ppm / 4%
56				0.25 ppm / 4%
63				0.06 ppm / 4%
70				0.04 ppm / 4%
Animal ID 5				
7				0.16 ppm / 4%
14				0.24 ppm / 4%
21				0.24 ppm / 4%
28				0.35 ppm / 4%
35				0.35 ppm / 4%

Note: Concentration data includes (concentration in reported units / percent fat).

Claborn et al., 1963

Journal of Agricultural and Food Chemistry. 11: 286

Day	Beef fat	Beef tissue	Milk fat	Whole milk
42				0.35 ppm / 4%
49				0.26 ppm / 4%
56				0.24 ppm / 4%
63				0.06 ppm / 4%
70				0.02 ppm / 4%
Animal ID 7				
7				0.61 ppm / 4%
14				0.69 ppm / 4%
21				0.87 ppm / 4%
28				0.66 ppm / 4%
35				0.69 ppm / 4%
42				0.77 ppm / 4%
49				0.53 ppm / 4%
56				0.52 ppm / 4%
63				0.14 ppm / 4%
70				0.11 ppm / 4%
77				0.09 ppm / 4%
Animal ID 8				
7				0.47 ppm / 4%
14				0.5 ppm / 4%
21				0.65 ppm / 4%
28				0.67 ppm / 4%
35				0.53 ppm / 4%
42				0.69 ppm / 4%
49				0.48 ppm / 4%
56				0.48 ppm / 4%
63				0.16 ppm / 4%
70				0.13 ppm / 4%
77				0.09 ppm / 4%
Animal ID 10				
7				0.87 ppm / 4%

Note: Concentration data includes (concentration in reported units / percent fat).

Claborn et al., 1963

Journal of Agricultural and Food Chemistry. 11: 286

Day	Beef fat	Beef tissue	Milk fat	Whole milk
14				1 ppm / 4%
21				1.08 ppm / 4%
28				1.19 ppm / 4%
35				1.13 ppm / 4%
42				1.04 ppm / 4%
49				0.97 ppm / 4%
56				0.96 ppm / 4%
63				0.18 ppm / 4%
70				0.16 ppm / 4%
77				0.15 ppm / 4%
Animal ID 11				
7				0.85 ppm / 4%
14				1.05 ppm / 4%
21				1.04 ppm / 4%
28				1.19 ppm / 4%
35				0.92 ppm / 4%
42				0.89 ppm / 4%
49				0.68 ppm / 4%
56				0.88 ppm / 4%
63				0.17 ppm / 4%
70				0.18 ppm / 4%
Animal ID 13				
7				1.13 ppm / 4%
14				1.09 ppm / 4%
21				1.4 ppm / 4%
28				1.45 ppm / 4%
35				1.23 ppm / 4%
42				1.23 ppm / 4%
49				1.53 ppm / 4%
56				1.44 ppm / 4%
63				0.3 ppm / 4%
70				0.22 ppm / 4%

Note: Concentration data includes (concentration in reported units / percent fat).

Claborn et al., 1963

Journal of Agricultural and Food Chemistry. 11: 286

Day	Beef fat	Beef tissue	Milk fat	Whole milk
77				0.21 ppm / 4%
Animal ID 14				
7				1.74 ppm / 4%
14				2.36 ppm / 4%
21				2.32 ppm / 4%
28				2.47 ppm / 4%
35				1.96 ppm / 4%
42				2.31 ppm / 4%
49				2.24 ppm / 4%
56				2.51 ppm / 4%
63				0.46 ppm / 4%
70				0.8 ppm / 4%
77				0.26 ppm / 4%

Note: Concentration data includes (concentration in reported units / percent fat).

Clark et al., 1975

Journal of Agricultural and Food Chemistry. 23: 573

The metabolic fate of three chlorophenoxyl acid herbicides were studied using adult sheep and adult beef cattle. Both sheep and cattle were fed 2,4-D and silvex. In addition sheep were fed 2,4,5-T. Animals were dosed for 28 days at 0, 300, 1000, and 2000 ppm. Residues of parent compounds and metabolites were measured in muscle, fat, liver, and kidney. The authors note the concentrations that animals would be exposed to due to field applications would be closer to 100-150 ppm. Decreased weight gains were observed, especially for animals on the highest dose. Concentrations in muscle and fat were generally low. Concentrations were much higher in the liver and kidney. All concentrations decreased significantly after a 7 day withdrawal period. The authors conclude that these chemicals should not be present in animal tissues at more than minimal residues, especially if animals are removed from contaminated feed 1 or 2 weeks prior to slaughter.

2,4-D

Experiment Comments: The body weight is an average of all animals at the start of the study. The body weight change is an average value for animals at each dosage level. The chemical intake rate and the feed intake rate are calculated assuming the animals ingest 3% of their body weight. Fat and muscle type are not provided.

Analytical Method: Tissue residue levels were determined by gas chromatography with a Ni-electron capture detector. Muscle samples were freeze dried and then homogenized with hot ethanol. Fat samples were dissolved in hot ethanol, refluxed, chilled, and then filtered. On average, recovery rates of known standards were 90%.

Animal Data

Animal ID	Days Dosed	Lactation status	Description	Chemical Intake Rate	Feed Concentration	Feed Intake Rate	Weight
1701	28	non-lactating	adult beef cattle	9 mg/kgBW/d	300 ppm	7.71 kgDW/d	257 kg
1702	28	non-lactating	adult beef cattle	9 mg/kgBW/d	300 ppm	7.71 kgDW/d	257 kg
1713	28	non-lactating	adult beef cattle	9 mg/kgBW/d	300 ppm	7.71 kgDW/d	257 kg
1703	28	non-lactating	adult beef cattle	30 mg/kgBW/d	1000 ppm	7.71 kgDW/d	257 kg
1714	28	non-lactating	adult beef cattle	30 mg/kgBW/d	1000 ppm	7.71 kgDW/d	257 kg
1715	28	non-lactating	adult beef cattle	30 mg/kgBW/d	1000 ppm	7.71 kgDW/d	257 kg
1704	28	non-lactating	adult beef cattle	60 mg/kgBW/d	2000 ppm	7.71 kgDW/d	257 kg
1705	28	non-lactating	adult beef cattle	60 mg/kgBW/d	2000 ppm	7.71 kgDW/d	257 kg
1710	28	non-lactating	adult beef cattle	60 mg/kgBW/d	2000 ppm	7.71 kgDW/d	257 kg
1706	28	non-lactating	adult beef cattle	60 mg/kgBW/d	2000 ppm	7.71 kgDW/d	257 kg
1711	28	non-lactating	adult beef cattle	60 mg/kgBW/d	2000 ppm	7.71 kgDW/d	257 kg
1712	28	non-lactating	adult beef cattle	60 mg/kgBW/d	2000 ppm	7.71 kgDW/d	257 kg

Media Concentrations

Note: Concentration data includes (concentration in reported units / percent fat).

Clark et al., 1975

Journal of Agricultural and Food Chemistry. 23: 573

Day	Beef fat	Beef tissue	Milk fat	Whole milk
Animal ID 1701				
28	0.15 mg/kg			
Animal ID 1702				
28	0.10 mg/kg			
Animal ID 1713				
28	0.15 mg/kg			
Animal ID 1703				
28	0.70 mg/kg			
Animal ID 1714				
28	0.3 mg/kg			
Animal ID 1715				
28	0.35 mg/kg			
Animal ID 1704				
28	0.25 mg/kg	0.06 mg/kg (muscle)		
Animal ID 1705				
28	0.57 mg/kg	0.06 mg/kg (muscle)		
Animal ID 1710				
28	0.20 mg/kg	0.10 mg/kg (muscle)		
Animal ID 1706				
35	0.40 ppm	0.08 ppm (muscle)		
Animal ID 1711				
35	0.20 ppm			
Animal ID 1712				
35	0.25 ppm			

fenoprop (silvex)

Experiment Comments: The body weight is an average of all animals at the start of the study. The body weight change is an average value for animals at each dosage level. The chemical intake rate and the feed intake rate are calculated assuming the animals ingest 3% of

Note: Concentration data includes (concentration in reported units / percent fat).

Clark et al., 1975

Journal of Agricultural and Food Chemistry. 23: 573

their body weight. Fat and muscle type are not provided.

Analytical Method: Tissue residue levels were determined by gas chromatography with a Ni-electron capture detector. Muscle samples were freeze dried and then homogenized with hot ethanol. Fat samples were dissolved in hot ethanol, refluxed, chilled, and then filtered. On average, recovery rates of known standards were 93%.

Animal Data

Animal ID	Days Dosed	Lactation status	Description	Chemical Intake Rate	Feed Concentration	Feed Intake Rate	Weight
1734	28	non-lactating	adult beef cattle	9 mg/kgBW/d	300 ppm	7.71 kgDW/d	257 kg
1737	28	non-lactating	adult beef cattle	9 mg/kgBW/d	300 ppm	7.71 kgDW/d	257 kg
1732	28	non-lactating	adult beef cattle	30 mg/kgBW/d	1000 ppm	7.71 kgDW/d	257 kg
1736	28	non-lactating	adult beef cattle	30 mg/kgBW/d	1000 ppm	7.71 kgDW/d	257 kg
1739	28	non-lactating	adult beef cattle	30 mg/kgBW/d	1000 ppm	7.71 kgDW/d	257 kg
1731	28	non-lactating	adult beef cattle	60 mg/kgBW/d	2000 ppm	7.71 kgDW/d	257 kg
1733	28	non-lactating	adult beef cattle	60 mg/kgBW/d	2000 ppm	7.71 kgDW/d	257 kg
1742	28	non-lactating	adult beef cattle	60 mg/kgBW/d	2000 ppm	7.71 kgDW/d	257 kg
1728	28	non-lactating	adult beef cattle	60 mg/kgBW/d	2000 ppm	7.71 kgDW/d	257 kg
1740	28	non-lactating	adult beef cattle	60 mg/kgBW/d	2000 ppm	7.71 kgDW/d	257 kg
1741	28	non-lactating	adult beef cattle	60 mg/kgBW/d	2000 ppm	7.71 kgDW/d	257 kg

Media Concentrations

Day	Beef fat	Beef tissue	Milk fat	Whole milk
Animal ID 1734				
28	1.80 mg/kg	0.10 mg/kg		
Animal ID 1737				
28	0.12 mg/kg	0.05 mg/kg (muscle)		
Animal ID 1732				
28	0.48 mg/kg	0.09 mg/kg (muscle)		
Animal ID 1736				
28	1.70 mg/kg	0.10 mg/kg (muscle)		

Note: Concentration data includes (concentration in reported units / percent fat).

Clark et al., 1975

Journal of Agricultural and Food Chemistry. 23: 573

Day	Beef fat	Beef tissue	Milk fat	Whole milk
Animal ID 1739				
28	1.90 mg/kg	0.09 mg/kg (muscle)		
Animal ID 1731				
28	1.40 mg/kg	0.05 mg/kg (muscle)		
Animal ID 1733				
28	8.00 mg/kg	2.00 mg/kg (muscle)		
Animal ID 1742				
28	1.90 mg/kg	0.05 mg/kg (muscle)		
Animal ID 1728				
35	0.60 ppm	0.06 ppm (Muscle)		
Animal ID 1740				
35	1.00 ppm			
Animal ID 1741				
35	0.40 ppm	0.25 ppm (Muscle)		

Note: Concentration data includes (concentration in reported units / percent fat).

Clark et al., 1981

Journal of Agricultural and Food Chemistry. 29: 1175

12 lactating dairy cows were fed mufluidide at 0, 6, 18, and 60 ppm for 28 days. No changes in weight, milk production, or feed intake were observed. All milk and tissue residues were below the detectable level except at the 60 ppm level.

mefluidide

Experiment Comments:

Analytical Method: Cattle were fed technical mefluidide via a gelatin capsule twice daily. Milk samples were collected twice daily every 3 days of the study. Samples were analyzed first by elution chromatography and then excracted with acetonitrile for GC. The method was validated to 0.005 ppm for milk and 0.01 ppm for tissue.

Animal Data

Animal ID	Days Dosed	Lactation status	Description	Chemical Intake Rate	Feed Concentration	Feed Intake Rate	Weight
277	28	lactating	Holstein		18 ppm		
227	28	lactating	Holstein		60 ppm		
657	28	lactating	Holstein		60 ppm		
670	28	lactating	Holstein		60 ppm		

Media Concentrations

Day	Beef fat	Beef tissue	Milk fat	Whole milk
Animal ID 277				
21				0.006 ppm
29	0.01 ppm (adipose)			
Animal ID 227				
1				0.006 ppm
3				0.008 ppm
7				0.009 ppm
10				0.006 ppm
14				0.006 ppm
17				0.007 ppm
21				0.005 ppm
24				0.006 ppm

Note: Concentration data includes (concentration in reported units / percent fat).

Clark et al., 1981

Journal of Agricultural and Food Chemistry. 29: 1175

Day	Beef fat	Beef tissue	Milk fat	Whole milk
28				0.007 ppm
29	0.03 ppm (adipose)			
Animal ID 657				
1				0.014 ppm
3				0.013 ppm
7				0.013 ppm
10				0.01 ppm
14				0.014 ppm
17				0.009 ppm
21				0.015 ppm
24				0.013 ppm
28				0.015 ppm
Animal ID 670				
3				0.005 ppm
14				0.005 ppm
21				0.005 ppm
24				0.005 ppm
28				0.007 ppm
29		0.01 ppm (loin muscle)		

Note: Concentration data includes (concentration in reported units / percent fat).

Crayford et al., 1976

Pesticide Science. 7: 559

Experiments were conducted to determine the metabolic fate of three structurally related herbicides: benzoylprop-ethyl, flamprop-methyl, and flamprop-isopropyl. All three chemicals were administered to lacatating cows for up to 8 days. The flamprop-isopropyl was also administerd to pigs and hens. Concentrations were measured in milk throughout the experiment. Concentrations of benzoylprop-ethyl and flamprop-isopropyl were present in milk and some tissues. Concentrations of flamprop-methylwere detected only in bile, liver, and kidney samples. The authors concluded that all three chemicals are rapidly metabolized and are not expected to accumulate in tissues.

benzoylprop-ethyl

Experiment Comments: Treatment administered as dose in an encapsulated solution in vegetable oil. Animals were sacrificed the day after the last feeding for tissue concentrations. Assume feed intake is as dry. Animals consumed 3 kg nuts and 4 kg hay two times a day. The average milk production per day was calculated based on data in Table 2. Data were also presented for several other tissues including omental fat and several organs. For milk samples, the data entered were averages of the morning and evening milk samples.

Analytical Method: Study measured radioactivity in milk by liquid scintillation spectrometer. All assays were performed in duplicate. Corrections were made for backgroud concentrations as necessary. For a few samples, thin-layer chromatography was used to determine the amount of the parent compound present in samples. Based on this analysis, the majority of the radioactivity detected in tissues was not the parent compound. However, concentrations are reported as the parent compound.

Animal Data

Animal ID	Days Dosed	Lactation status	Description	Chemical Intake Rate	Feed Concentration	Feed Intake Rate	Weight
1	7	lactating	Ayshire	29.84 mg/d	3 mg/kg	14 kgDW/d	450 kg

Media Concentrations

Day	Beef fat	Beef tissue	Milk fat	Whole milk
Animal ID 1				
1				0.0009 mg/kg
2				0.00105 mg/kg
3				0.00105 mg/kg
4				0.00105 mg/kg
5				0.001 mg/kg
6				0.00115 mg/kg

Note: Concentration data includes (concentration in reported units / percent fat).

Crayford et al., 1976

Pesticide Science. 7: 559

Day	Beef fat	Beef tissue	Milk fat	Whole milk
7				0.00105 mg/kg
8		0.0008 mg/kg (rear leg)		
8		0.0016 mg/kg (fore leg)		
8	0.0032 mg/kg (subcutaneous)	0.0015 mg/kg (shoulder)		
8	0.0033 mg/kg (omental fat)	0.0013 mg/kg (lumber)		0.0006 mg/kg

flamprop-isopropyl

Experiment Comments: Study administered treatment through treated feed twice a day. Animals were sacrificed the day after the last feeding for tissue concentrations. Animals consumed 3 kg nuts and 4 kg hay two times a day. The average milk production per day was calculated based on data in Table 2. Data were also presented for several other tissues including omental fat and several organs. For milk samples, the data entered were averages of the morning and evening milk samples. The animal weight is the average of the minimum and maximum weight of animals in the experiment.

Analytical Method: Study measured radioactivity in milk by liquid scintillation spectrometer. All assays were performed in duplicate. Corrections were made for backgroud concentrations as necessary. For a few samples, thin-layer chromatography was used to determine the amount of the parent compound present in samples. Based on this analysis, the majority of the radioactivity detected in tissues was not the parent compound. However, concentrations are reported as the parent compound.

Animal Data

Animal ID	Days Dosed	Lactation status	Description	Chemical Intake Rate	Feed Concentration	Feed Intake Rate	Weight
1	8	lactating	Friesian	5.06 mg/d	0.5 mg/kg	14 kgDW/d	525 kg

Media Concentrations

Day	Beef fat	Beef tissue	Milk fat	Whole milk
Animal ID 1				
1				0.0002 mg/kg
2				0.00035 mg/kg
3				0.00025 mg/kg
4				0.00035 mg/kg
5				0.00035 mg/kg

Note: Concentration data includes (concentration in reported units / percent fat).

Crayford et al., 1976

Pesticide Science. 7: 559

Day	Beef fat	Beef tissue	Milk fat	Whole milk
6				0.0003 mg/kg
7				0.0003 mg/kg
8				0.0003 mg/kg
9	0.002 mg/kg (subcutaneous)			
9	0.002 mg/kg (omental)			0.0003 mg/kg

Note: Concentration data includes (concentration in reported units / percent fat).

Croucher et al., 1985

Pesticide Science. 16: 287

This study measured levels of cypermethrin in lactating cows. Cypermethrin has a LogKow of 6.06 and would be expected to accumulated in fat tissue based solely on the LogKow. However, cypermethrin undergoes rapid elimination and metabolism via hydrolysis, oxidation, and conjugation.

In this study, two cows were administered 2 mg/day, three cows were administered 50 mg/day, and one cow was administered 100 mg/day of C14-labeled cypermethrin. Cows were dosed for either 7, 20, or 21 days. Concentrations were shown to have leveled off at 4 days in milk samples. The chemical was eliminated from the animals mostly by urine and feces. The radioactivity recovered from urine and feces ranged from 76 to 102 percent. Only a small amount of the chemical was detected in milk and some was also detected in subcutaneous fat samples. Muscle concentrations were too low to be quantified. The chemical in milk and fat samples was proven to be cypermethrin and not one of its metabolites.

cypermethrin

Experiment Comments: The feed concentration was calculated in the articule using an assumed feed intake rate of 10 kg/d. The article did not explictly note if the intake rates were dry or wet weight. Given the amounts, it was assumed that the rate was for dry weight. Milk production was measured throughout the experiment and no major perturbations were noted for any of the animals.

Analytical Method: Several methods were used to analyze and identify compounds including scintillation counting, TLC, GLC, and MS. Recoveries were >90% in all cases.

Animal Data

Animal ID	Days Dosed	Lactation status	Description	Chemical Intake Rate	Feed Concentration	Feed Intake Rate	Weight
1	20	lactating	Mature Friesians	2 mg/d	0.2 mg/kg	10 kgDW/d	
2	21	lactating	Mature Friesians	2 mg/d	0.2 mg/kg	10 kgDW/d	
3	7	lactating	Mature Friesians	50 mg/d	5 mg/kg	10 kgDW/d	
4	7	lactating	Mature Friesians	50 mg/d	5 mg/kg	10 kgDW/d	
5	7	lactating	Mature Friesians	50 mg/d	5 mg/kg	10 kgDW/d	
6	7	lactating	Mature Friesians	100 mg/d	10 mg/kg	10 kgDW/d	

Media Concentrations

Day	Beef fat	Beef tissue	Milk fat	Whole milk
Animal ID 1				
20	0.009 mg/kg			0.0006 mg/kg

Note: Concentration data includes (concentration in reported units / percent fat).

Croucher et al., 1985

Pesticide Science. 16: 287

Day	Beef fat	Beef tissue	Milk fat	Whole milk
Animal ID 2				
21	0.008 mg/kg			0.0006 mg/kg
Animal ID 3				
7	0.03 mg/kg			0.012 mg/kg
Animal ID 4				
7	0.04 mg/kg			0.011 mg/kg
Animal ID 5				
7	0.06 mg/kg			0.012 mg/kg
Animal ID 6				
7	0.08 mg/kg			0.031 mg/kg / 3.85%

Note: Concentration data includes (concentration in reported units / percent fat).

Dingle and Palmer, 1977

Australian Journal of Experimental Agriculture and Animal Husbandry. 17: 712

Four experiments were carried out to assess hexachlorobenzene residues in subcutaneous fat of steers and butterfat in milk in lactating cattle. The rate of rise in HCB in fat increased with dose rate. The residues then decreased exponentially. In experiment 1, 16 steers were fed at 6, 36, and 216 mg/d. Experiment 2 was of the same design, but monitored the individuals up to 3 weeks after the dosing period ended. Experiment 3 divided animals from experiment 1 into two groups, half on a full ration, and half on a starved diet. These animals were monitored for a 4 week period afterward. Experiment 4 studied 16 lactating cows at 1,6, and 36 mg/d, taking milk and body fat samples. The mean half-life in subcutaneous fat for steers was 10.5 weeks. The mean half-life in butter fat from lactating cattle was 6.4 weeks.

hexachlorobenzene

Experiment Comments: Data are averages of four animals. Fat samples are subcutaneous. Feed intake assumed as dry.

Analytical Method: HCB was mixed in with the daily feed. Subcutaneous fat samples were taken from the gluteal region. Milk samples were taken twice daily and combined for analysis. Samples were analyzed by gas liquid chromatography with a florisil column using Avrahami and Steele's methods (1972). Recovery was 75%.

Animal Data

Animal ID	Days Dosed	Lactation status	Description	Chemical Intake Rate	Feed Concentration	Feed Intake Rate	Weight
1	70	non-lactating steer		6 mg/d		10 kgDW/d	250 kg
Note: Average of 4 cows.							
2	70	non-lactating steer		36 mg/d		10 kgDW/d	250 kg
Note: Average of 4 cows.							
3	70	non-lactating steer		216 mg/d		10 kgDW/d	250 kg
Note: Average of 4 cows.							
4	42	lactating		1 mg/d			
Note: Average of 4 cows.							
5	42	lactating		6 mg/d			
Note: Average of 4 cows.							
6	42	lactating		36 mg/d			
Note: Average of 4 cows.							
7	21	non-lactating steer		6 mg/d		10 kgDW/d	250 kg
Note: Average of 4 cows.							
8	21	non-lactating steer		36 mg/d		10 kgDW/d	250 kg
Note: Average of 4 cows.							
9	21	non-lactating steer		216 mg/d		10 kgDW/d	250 kg
Note: Average of 4 cows.							

Media Concentrations

Note: Concentration data includes (concentration in reported units / percent fat).

Dingle and Palmer, 1977

Australian Journal of Experimental Agriculture and Animal Husbandry. 17: 712

Day	Beef fat	Beef tissue	Milk fat	Whole milk
Animal ID 1				
1	0.01 mg/kg			
7	0.30 mg/kg			
14	0.64 mg/kg			
21	0.95 mg/kg			
28	1.38 mg/kg			
42	1.73 mg/kg			
56	0.95 mg/kg			
70	3.10 mg/kg			
Animal ID 2				
1	0.01 mg/kg			
7	1.95 mg/kg			
14	4.53 mg/kg			
21	7.55 mg/kg			
28	7.38 mg/kg			
42	8.48 mg/kg			
56	12.5 mg/kg			
70	16.25 mg/kg			
Animal ID 3				
1	0.01 mg/kg			
7	9.95 mg/kg			
14	24.75 mg/kg			
21	42.75 mg/kg			
28	49.5 mg/kg			
42	81.0 mg/kg			
56	80.75 mg/kg			
70	98.5 mg/kg			
Animal ID 4				
1	0.02 mg/kg			
14	0.22 mg/kg			
28	0.28 mg/kg			

Note: Concentration data includes (concentration in reported units / percent fat).

Dingle and Palmer, 1977

Australian Journal of Experimental Agriculture and Animal Husbandry. 17: 712

Day	Beef fat	Beef tissue	Milk fat	Whole milk
42	0.36 mg/kg			
56	0.46 mg/kg			
70	0.51 mg/kg			
84	0.3 mg/kg			
98	0.32 mg/kg			
112	0.24 mg/kg			
126	0.18 mg/kg			
140	0.13 mg/kg			
154	0.12 mg/kg			
Animal ID 5				
1	0.01 mg/kg			
14	4.30 mg/kg			
28	6.16 mg/kg			
42	4.37 mg/kg			
56	2.45 mg/kg			
70	1.40 mg/kg			
84	1.12 mg/kg			
98	0.79 mg/kg			
112	0.41 mg/kg			
126	0.52 mg/kg			
140	0.50 mg/kg			
154	0.25 mg/kg			
Animal ID 6				
1	0.01 mg/kg			
14	6.88 mg/kg			
28	10.75 mg/kg			
42	16.70 mg/kg			
56	10.68 mg/kg			
70	8.58 mg/kg			
84	7.13 mg/kg			
98	6.00 mg/kg			
112	4.33 mg/kg			

Note: Concentration data includes (concentration in reported units / percent fat).

Dingle and Palmer, 1977

Australian Journal of Experimental Agriculture and Animal Husbandry. 17: 712

Day	Beef fat	Beef tissue	Milk fat	Whole milk
126	3.10 mg/kg			
140	4.48 mg/kg			
154	3.27 mg/kg			
Animal ID 7				
21	0.98 mg/kg			
28	0.87 mg/kg			
42	0.79 mg/kg			
56	0.74 mg/kg			
70	0.68 mg/kg			
84	0.57 mg/kg			
98	0.46 mg/kg			
119	0.40 mg/kg			
126	0.38 mg/kg			
140	0.33 mg/kg			
154	0.24 mg/kg			
182	0.19 mg/kg			
Animal ID 8				
21	8.25 mg/kg			
28	6.65 mg/kg			
42	6.38 mg/kg			
56	4.48 mg/kg			
70	4.80 mg/kg			
84	4.85 mg/kg			
98	3.03 mg/kg			
119	3.20 mg/kg			
126	2.73 mg/kg			
140	1.54 mg/kg			
154	1.58 mg/kg			
182	1.92 mg/kg			
Animal ID 9				
21	42.25 mg/kg			

Note: Concentration data includes (concentration in reported units / percent fat).

Dingle and Palmer, 1977

Australian Journal of Experimental Agriculture and Animal Husbandry. 17: 712

Day	Beef fat	Beef tissue	Milk fat	Whole milk
28	34.5 mg/kg			
42	33.25 mg/kg			
56	28.75 mg/kg			
70	26.75 mg/kg			
84	28.75 mg/kg			
98	25.00 mg/kg			
119	16.75 mg/kg			
126	20.75 mg/kg			
140	10.65 mg/kg			
154	14.5 mg/kg			
182	12.38 mg/kg			

Note: Concentration data includes (concentration in reported units / percent fat).

Dishburger et al., 1977

Journal of Agricultural and Food Chemistry. 25: 1325

Cattle were fed chlorpyrifos for 30 days at levels of 3, 10, 30, and 100 ppm. At the end of exposure, samples of muscle, liver, kidney, omental fat, renal fat, and subcutaneous fat were collected. One group of cows at the 100 ppm dose was monitored for 5 weeks after dosing to determine withdrawal. Residues of chlorpyrifos and its oxygen analogues were determined by thermionic or flame photometric gas chromatography. The trimethylsilyl derviative was also measured. Residues appeared to decline rapidly after dosing ended.

chlorpyrifos

Experiment Comments: Eighteen heifers were divided into 6 groups by body weight, which ranged from 347-524 lbs. Chlorpyrifos was administered via gelatin capsule, with the amount given derived from the average daily dry matter intake of the animal.

Analytical Method: Chlorpyrifos concentrations and its oxygen analogues were determined by thermionic chromotography (fat samples) and flame photometric chromatography (tissue). Recoveries for chlorpyrifos were 86%-88%. Additionally, 3,5,6-trichloro-2-pyridinol residues were measured by electron-capture chromatography. Recovery for 3,5,6-trichlor-2-pyridinol ws 81%-89%. 3,5,6-trichloro-2-pyridinol samples were also analyzed using alkaline hydrolysis.

Animal Data

Animal ID	Days Dosed	Lactation status	Description	Chemical Intake Rate	Feed Concentration	Feed Intake Rate	Weight
802	30	non-lactating	Hereford crossbred heifer		3 ppm		
817	30	non-lactating	Hereford crossbred heifer		3 ppm		
804	30	non-lactating	Hereford crossbred heifer		10 ppm		
807	30	non-lactating	Hereford crossbred heifer		10 ppm		
813	30	non-lactating	Hereford crossbred heifer		10 ppm		
805	30	non-lactating	Hereford crossbred heifers		30 ppm		
812	30	non-lactating	Hereford crossbred heifer		30 ppm		
820	30	non-lactating	Hereford crossbred heifer		30 ppm		
808	30	non-lactating	Hereford crossbred heifer		100 ppm		
811	30	non-lactating	Hereford crossbred heifer		100 ppm		
815	30	non-lactating	Hereford crossbred heifer		100 ppm		
814	30	non-lactating	Hereford crossbred heifer		100 ppm		
816	30	non-lactating	Hereford crossbred heifer		100 ppm		
818	30	non-lactating	Hereford crossbred heifer		100 ppm		

Media Concentrations

Note: Concentration data includes (concentration in reported units / percent fat).

Dishburger et al., 1977

Journal of Agricultural and Food Chemistry. 25: 1325

Day	Beef fat		Beef tissue	Milk fat	Whole milk
Animal ID 802					
30	0.01 ppm	(subcutaneous fat)			
30	0.02 ppm	(omental fat)			
Animal ID 817					
30	0.03 ppm	(subcutaneous fat)			
30	0.05 ppm	(omental fat)			
Animal ID 804					
30	0.16 ppm	(subcutaneous fat)	0.02 ppm		
30	0.11 ppm	(omental fat)			
Animal ID 807					
30	0.07 ppm	(subcutaneous fat)			
30	0.08 ppm	(omental fat)			
Animal ID 813					
30	0.08 ppm	(subcutaneous fat)			
30	0.11 ppm	(omental fat)			
Animal ID 805					
30	0.21 ppm	(subcutaneous fat)			
30	0.43 ppm	(omental fat)			
Animal ID 812					
30	0.85 ppm	(omental fat)			
30	0.59 ppm	(subcutaneous fat)	0.01 ppm		
Animal ID 820					
30	0.35 ppm	(omental fat)			
30	0.26 ppm	(subcutaneous fat)	0.02 ppm		
Animal ID 808					
30	2.89 ppm	(omental fat)			

Note: Concentration data includes (concentration in reported units / percent fat).

Dishburger et al., 1977

Journal of Agricultural and Food Chemistry. 25: 1325

Day	Beef fat		Beef tissue	Milk fat	Whole milk
30	3.52 ppm	(subcutaneous fat)	0.14 ppm		
Animal ID 811					
30	4.37 ppm	(subcutaneous fat)	0.23 ppm		
30	2.72 ppm	(omental fat)			
Animal ID 815					
30	2.92 ppm	(subcutaneous fat)	0.34 ppm		
30	2.28 ppm	(omental fat)			
Animal ID 814					
37	1.15 ppm	(omental fat)			
44	0.67 ppm	(omental fat)			
51	0.58 ppm	(omental fat)			
58	0.15 ppm	(omental fat)			
65	0.04 ppm	(omental fat)			
Animal ID 816					
37	0.98 ppm	(omental fat)			
44	0.15 ppm	(omental fat)			
51	0.13 ppm	(omental fat)			
58	0.07 ppm	(omental fat)			
Animal ID 818					
37	0.66 ppm	(omental fat)			
44	0.26 ppm	(omental fat)			
51	0.09 ppm	(omental fat)			
58	0.02 ppm	(omental fat)			

Note: Concentration data includes (concentration in reported units / percent fat).

Dorough and Hemken, 1973

Bulletin of Environmental Contamination and Toxicology. 10: 208

A study was conducted to determine residue concentrations of chlordane and its metabolites in cow's milk. Chlordane is either alpha-chlordane or gamma-chlordane. Animals were given feed with 1, 10, or 100 ppm of HCS 3260, a high purity form of chlordane (i.e., >95% pure) for 60 days. Milk samples were taken daily and for an additional 60 days after feeding stopped. Fat samples were also taken at 30, 60, and 90 days. Analysis of milk fat identified oxychlordane as the major metabolite (70-75% of total chlordane residue). Alpha-chlordane (20%) and gamma-chlordane (5-10%) were also present. Similar results were noted in fat samples. Oxychlordane is a product of chlordane metabolism.

chlordane

Experiment Comments: Cows were fed HCS 3260 via a gelatin capsule. The amounts in the capsules were equivalent to animals consuming 50 lbs/day of feed at 1, 10, or 100 ppm HCS 3260. Animal weights are approximations for all three animals. The concentration data are a sum of the values provided for alpha-chlordane and gamma-chlordane.

Analytical Method: Used a gas chromatograph equipped with an electron detector. Samples were extracted with ethane. A mass spectrometer was used to positively identify oxychlordane in milk and body fat. Recovery rates were >80% and were usually 92%.

Animal Data

Animal ID	Days Dosed	Lactation status	Description	Chemical Intake Rate	Feed Concentration	Feed Intake Rate	Weight
1	60	lactating	Holstein		1 ppm	50 lbsDW/d	1400 lbs
2	60	lactating	Holstein		10 ppm	50 lbsDW/d	1400 lbs
3	60	lactating	Holstein		100 ppm	50 lbsDW/d	1400 lbs

Media Concentrations

Day	Beef fat	Beef tissue	Milk fat	Whole milk
Animal ID 1				
3			0.19 ppm / 3.6%	
7			0.32 ppm / 3.6%	
15			0.33 ppm / 3.6%	
30	0.24 ppm		0.43 ppm / 3.6%	
60	0.47 ppm		0.48 ppm / 3.6%	
61			0.36 ppm / 3.6%	
67			0.29 ppm / 3.6%	
75			0.11 ppm / 3.6%	

Note: Concentration data includes (concentration in reported units / percent fat).

Dorough and Hemken, 1973

Bulletin of Environmental Contamination and Toxicology. 10: 208

Day	Beef fat	Beef tissue	Milk fat	Whole milk
90	0.45 ppm		0.08 ppm / 3.6%	
120			0.1 ppm / 3.6%	
Animal ID 2				
3			0.87 ppm / 3.6%	
7			1.53 ppm / 3.6%	
15			2.10 ppm / 3.6%	
30	1.40 ppm		2.53 ppm / 3.6%	
60	1.18 ppm		2.64 ppm / 3.6%	
61			2.24 ppm / 3.6%	
67			0.81 ppm / 3.6%	
75			0.62 ppm / 3.6%	
90	1.53 ppm		0.68 ppm / 3.6%	
120			0.47 ppm / 3.6%	
Animal ID 3				
3			1.82 ppm / 3.6%	
7			2.98 ppm / 3.6%	
15			3.76 ppm / 3.6%	
30	2.65 ppm		4.58 ppm / 3.6%	
60	3.97 ppm		4.85 ppm / 3.6%	
61			4.71 ppm / 3.6%	
67			2.51 ppm / 3.6%	
75			1.53 ppm / 3.6%	
90	2.98 ppm		1.38 ppm / 3.6%	
120			1.26 ppm / 3.6%	

Note: Concentration data includes (concentration in reported units / percent fat).

Dorough and Ivie, 1974

Journal of Environmental Quality. 3: 65

Mirex was administered to a cow for 28 days at a level equivalent to 0.2 ppm per day. Residues in milk reached 0.58 ppm after 1 week and remained at that concentration while the contaminated feed was administered. Study found that mirex was largely eliminated through the feces (approx 50% of the dose), but this was largely the unabsorbed mirex, indicating a slow turnover rate in the tissues. TLC analysis and radioautography also found that the radiocarbon in samples had only one component (mirex) and was hardly metabolized.

mirex

Experiment Comments: Concentrations are reported for total 14C residue. Did not analyze components, but noted that TLC analysis indicated only one component was present samples (mirex).

Analytical Method: C14 mirex was dissolved in acetone and added to a gelatin capsule containing crushed grain. Cow had 2 capsules/day. Radioassays were preformed for samples using a scintillation counter. GLC and thin-layer chromatography were used to verify radioactivity was only due to mirex. The average recovery rate was 103%.

Animal Data

Animal ID	Days Dosed	Lactation status	Description	Chemical Intake Rate	Feed Concentration	Feed Intake Rate	Weight
1	28	lactating	Jersey	4 mg/d	0.2 ppm	20 kgDW/d	375 kg

Media Concentrations

Day	Beef fat	Beef tissue	Milk fat	Whole milk	
Animal ID 1					
28				0.058 ppm	(At steady state)
35				0.006 ppm	
56				0.002 ppm	

Note: Concentration data includes (concentration in reported units / percent fat).

Ely et al., 1954b

Journal of Dairy Science. 37: 294

Two experiments are presented in this reference. One study used field-applied aldrin on alfalfa and fed the treated hay to lactating cows for 48 days. No aldrin was detected in the milk at feed concentrations less than 28 ppm. Another experiment was conducted in which various doses of aldrin in soybean oil capsules were fed to cows for 44 days. From this experiment it was determined that 11%-14% of aldrin was excreted in the milk. It should be noted that later articles explain that aldrin is readily metabolized to dieldrin. Since concentrations in this article are measured as total chlorine, the results are still valid. The results from the second experiment are provided. Measurements on butterfat and body fat of a test animal that died prematurely indicate that aldrin may be stored in the milk fat more than in the body fat.

dieldrin

Experiment Comments: Animals were fed aldrin, which is readily metabolized to dieldrin. Concentrations are not given over time and appear to be average values.

Analytical Method: Concentrations were determined using the total chlorine method. Recoveries ranged between 80% and 95%. Average concentrations in control samples were 1.27 ppm +/- 0.11 ppm. All milk concentrations are reported in units of fat-corrected milk, but the percent fat measured was not reported.

Animal Data

Animal ID	Days Dosed	Lactation status	Description	Chemical Intake Rate	Feed Concentration	Feed Intake Rate	Weight
N661	44	lactating		240 mg/d	30.6 ppm		
Note: Chemical intake rate also reported as 0.8mg/kgBW/d.							
N669	44	lactating		300 mg/d	28.0 ppm		
Note: Chemical intake rate also reported as 1mg/kgBW/d.							
N675	44	lactating		420 mg/d	37.7 ppm		
Note: Chemical intake rate also reported as 1.5mg/kgBW/d.							
N171	29	lactating		960 mg/d	59.3 ppm		
Note: Chemical intake rate also reported as 2.2mg/kgBW/d. Animal died at day 29.							

Media Concentrations

Day	Beef fat	Beef tissue	Milk fat	Whole milk	
Animal ID N661					
44				3.8 ppm	(Study period's daily average)
52				1.8 ppm	(Excreted 12 mg.)
Animal ID N669					
44				4.3 ppm	(Study period's daily average)

Note: Concentration data includes (concentration in reported units / percent fat).

Ely et al., 1954b

Journal of Dairy Science. 37: 294

Day	Beef fat	Beef tissue	Milk fat	Whole milk
52				2.9 ppm (Excreted 21 mg.)
Animal ID N675				
44				6.4 ppm (Study period's daily average)
52				3.3 ppm (Excreted 27 mg.)
Animal ID N171				
23			300 ppm (butterfat)	
29	109.4 ppm (from kidney and body fat)			12.6 ppm (this is a daily average over study period.)

dieldrin

Experiment Comments: Data from Table 2. Two cows were each fed at two dosage levels and are distinguished as "a" and "b". The data presented are from the study in which animals were dosed via capsules. Note, milk residues are fat-corrected milk.

Analytical Method: Technical diedrin was dissolved in soybean oil and administered by capsule twice daily. Total chlorine was used to make estimates of dieldrin in milk samples. The dieldrin content of 26 blanks was 0.20 +/- 0.02 ppm. Reported amounts have been corrected by this amount.

Animal Data

Animal ID	Days Dosed	Lactation status	Description	Chemical Intake Rate	Feed Concentration	Feed Intake Rate	Weight
N803b	40	lactating	Holstein or Jersey	1000 mg/d	8.64 ppm		
N803a	50	lactating	Holstein or Jersey	800 mg/d	5.97 ppm		
N684b	40	lactating	Holstein or Jersey	600 mg/d	5.52 ppm		
N684a	50	lactating	Holstein or Jersey	400 mg/d	3.34 ppm		

Media Concentrations

Day	Beef fat	Beef tissue	Milk fat	Whole milk
Animal ID N803b				
40				13.1 ppm
Animal ID N803a				
50				9.7 ppm

Note: Concentration data includes (concentration in reported units / percent fat).

Ely et al., 1954a

Journal of Dairy Science. 37: 1461

Day	Beef fat	Beef tissue	Milk fat	Whole milk
Animal ID	*N684b*			
40				6.6 ppm
Animal ID	*N684a*			
50				4.2 ppm

Note: Concentration data includes (concentration in reported units / percent fat).

Ely et al., 1955

Journal of Dairy Science. 38: 669

Heptachlor was applied to alfalfa fields at rates of 3.8 oz/acre and 8 oz/acre. Heptachlor was also applied to the soybean oil fed to cows for 50 days and 70 days. Only the experiment that spanned 70 days with the soybean oil resulted in detectable levels of heptachlor epoxide. Therefore it is the only experiment reported here.

heptachlor epoxide

Experiment Comments: Data are presented for cows fed heptachlor in soybean oil for the longest feeding duration provided (70 days). Heptachlor is readily metabolized to heptachlor epoxide. Note that feed concentrations and chemical intake rates are measured as heptachlor, but milk concentrations are measured as heptachlor epoxide.

Analytical Method: 3.8 oz heptachlor per acre was sprayed on alfalfa fields; alfalfa was harvested 7 days later. Heptachlor residues on hay were calculated from organic chlorine content using Carter and Hubanks' methods. Residues in milk were measured using Radomski and Davidow's methods.

Animal Data

Animal ID	Days Dosed	Lactation status	Description	Chemical Intake Rate	Feed Concentration	Feed Intake Rate	Weight
N193	70	lactating	Jersey or Holstein	1.3 mg/kgBW/d	44.6 ppm		
Note: Fat corrected milk							
N667	70	lactating	Jersey or Holstein	2.34 mg/kgBW/d	71.4 ppm		
Note: Fat corrected milk							
N194	70	lactating	Jersey or Holstein	1.95 mg/kgBW/d	53.0 ppm		
Note: Fat corrected milk							
N680	70	lactating	Jersey or Holstein	2.93 mg/kgBW/d	91.4 ppm		
Note: Fat corrected milk							
N681	70	lactating	Jersey or Holstein	3.17 mg/kgBW/d	110.5 ppm		
Note: Fat corrected milk							
N805	70	lactating	Jersey or Holstein	3.78 mg/kgBW/d	125 ppm		
Note: Fat corrected milk							

Media Concentrations

Day	Beef fat	Beef tissue	Milk fat	Whole milk	
Animal ID N193					
70				0.2 ppm	(fat-corrected.)
Animal ID N667					
70				0.8 ppm	(fat-corrected.)

Note: Concentration data includes (concentration in reported units / percent fat).

Ely et al., 1955

Journal of Dairy Science. 38: 669

Day	Beef fat	Beef tissue	Milk fat	Whole milk
Animal ID N194				
70				0.4 ppm (fat-corrected.)
Animal ID N680				
70				1.1 ppm (fat-corrected.)
Animal ID N681				
70				1.8 ppm (fat-corrected.)
Animal ID N805				
70				5.7 ppm (fat-corrected.)

methoxychlor

Experiment Comments: These same cows were fed contaminated hay the year before, which resulted in nondetectable levels of methoxychlor in milk. They were also fed crystalline methoxychlor at lower concentrations for 70 days prior to these results, which still resulted in nondetectable levels.

Analytical Method: Crystalline methoxychlor was fed as a 10% solution in soybean oil at different concentrations for 50-70 days. Residues in hay were measured using Carter and Hubanks' methods. Butterfat content determined by the Babcock method. Milk residues measured by methods of Claborn and Beckman.

Animal Data

Animal ID	Days Dosed	Lactation status	Description	Chemical Intake Rate	Feed Concentration	Feed Intake Rate	Weight
N652	50	lactating		8 g/d	573 ppm		
Note: Chemical intake rate also reported as 19.3mg/kgBW/d.							
N653	50	lactating		10 g/d	791 ppm		
Note: Chemical intake rate also reported as 26.7mg/kgBW/d.							
N666	50	lactating		12 g/d	1086 ppm		
Note: Chemical intake rate also reported as 37.1mg/kgBW/d.							
N667	50	lactating		15 g/d	2049 ppm		
Note: Chemical intake rate also reported as 50.2mg/kgBW/d. ate significantly less than other cows.							

Media Concentrations

Day	Beef fat	Beef tissue	Milk fat	Whole milk

Note: Concentration data includes (concentration in reported units / percent fat).

Ely et al., 1953

Journal of Dairy Science. 36: 309

Day	Beef fat	Beef tissue	Milk fat	Whole milk
Animal ID N652				
50				0.18 ppm / 4%
Animal ID N653				
50				0.27 ppm / 4%
Animal ID N666				
50				0.44 ppm / 4%
Animal ID N667				
50				1.16 ppm / 4%

Note: Concentration data includes (concentration in reported units / percent fat).

Ely et al., 1957

Journal of Economic Entomology. 50: 348

Cows were fed endrin dissolved in soybean oil at concentrations ranging from 2.5-77.7 ppm for up to 64 days. Authors noted that cows fed endrin in feed that was contaminated by spraying resulted in higher concentrations than material dissolved in soybean oil. Also, when endrin fed in excess of 1.5 mg/kgBW toxic symptoms were induced.

endrin

Experiment Comments: In a companion study, the same cows were fed endrin-contaminated feed the year before for 63 days. In this experiment, endrin was fed in soybean oil (Table 2). Cow N684 was not included because its data were averages over different days.

Analytical Method: Measured residues with the total organic chlorine method.

Animal Data

Animal ID	Days Dosed	Lactation status	Description	Chemical Intake Rate	Feed Concentration	Feed Intake Rate	Weight
N668	64	lactating		200 mg/d	13.4 ppm		
Note: Chemical intake rate also reported as 0.6mg/kgBW/d. Milk production is fat corrected.							
N675	64	lactating		500 mg/d	40.2 ppm		
Note: Chemical intake rate also reported as 1.42mg/kgBW/d. Milk production is fat corrected.							
N681	2	lactating		400 mg/d	50.5 ppm		
Note: Chemical intake rate also reported as 1.11mg/kgBW/d. Milk production is fat corrected.							

Media Concentrations

Day	Beef fat	Beef tissue	Milk fat	Whole milk
Animal ID N668				
64				0.05 ppm (fat-corrected)
Animal ID N675				
64				0.25 ppm (fat-corrected)
Animal ID N681				
2				0.20 ppm (fat-corrected; mean of last dosing day and day after)

endrin

Experiment Comments: These are the same cows that were fed contaminated soybean oil in 1954. The data presented represent data from 1953, fed via endrin-sprayed hay.

Analytical Method: Measured residues with the total organic chlorine method.

Note: Concentration data includes (concentration in reported units / percent fat).

Ely et al., 1957

Journal of Economic Entomology. 50: 348

Animal Data

Animal ID	Days Dosed	Lactation status	Description	Chemical Intake Rate	Feed Concentration	Feed Intake Rate	Weight
N341	48	lactating		43.9 mg/d	2.76 ppm		
Note: Chemical intake rate also reported as 0.11mg/kgBW/d.							
N666	48	lactating		37.4 mg/d	2.58 ppm		
Note: Chemical intake rate also reported as 0.08mg/kgBW/d.							
N667	48	lactating		33.4 mg/d	2.63 ppm		
Note: Chemical intake rate also reported as 0.09mg/kgBW/d.							
N668	48	lactating		23.5 mg/d	1.93 ppm		
Note: Chemical intake rate also reported as 0.07mg/kgBW/d.							
N675	48	lactating		20.5 mg/d	1.9 ppm		
Note: Chemical intake rate also reported as 0.06mg/kgBW/d.							
N681	48	lactating		23.6 mg/d	2.41 ppm		
Note: Chemical intake rate also reported as 0.06mg/kgBW/d.							
N684	48	lactating		28.7 mg/d	2.08 ppm		
Note: Chemical intake rate also reported as 0.08mg/kgBW/d.							
N649	48	lactating		34.6 mg/d	1.97 ppm		
Note: Chemical intake rate also reported as 0.08mg/kgBW/d.							

Media Concentrations

Day	Beef fat	Beef tissue	Milk fat	Whole milk	
Animal ID N341					
48				0.13 ppm	(fat-corrected.)
Animal ID N666					
48				0.11 ppm	(fat-corrected.)
Animal ID N667					
48				0.18 ppm	(fat-corrected.)
Animal ID N668					
48				0.14 ppm	(fat-corrected.)
Animal ID N675					
48				0.09 ppm	(fat-corrected.)

Note: Concentration data includes (concentration in reported units / percent fat).

Ely et al., 1957

Journal of Economic Entomology. 50: 348

Day	Beef fat	Beef tissue	Milk fat	Whole milk
Animal ID N681				
48				0.17 ppm (fat-corrected.)
Animal ID N684				
48				0.21 ppm (fat-corrected.)
Animal ID N649				
48				0.14 ppm (fat-corrected.)

Note: Concentration data includes (concentration in reported units / percent fat).

Ely et al., 1952

Journal of Dairy Science. 35: 266

DDT was administered to lactating cows with four different methods: 10% DDT in soybean oil solution fed as a gelatin capsule and as added to feed, and crystalline DDT fed as a gelatin capsule and as applied to feed. However, chronology of feeding methods is not documented, so feeding periods are unclear and milk residues were reported as averages over entire feeding period rather than measurements on a given day. The authors found no consistent differences among the 4 methods used. The DDT used in this study was crystalline. The authors also compared the milk concentrations in this study to concentrations noted from other studys using DDT fed as a residue from field-sprayed forage. Of note, study found that higher concentrations of DDT in milk occurred when cows were fed field-sprayed forage compared to concentrations resulting from the crystalline DDT. Regressions of intake versus concentration in milk were provided.

DDT

Experiment Comments: All milk concentrations are 4%-fat-corrected milk. The longest feeding period was selected for each animal. The concentrations are not given over time and appear to be an average.

Analytical Method: Milk analyses used a colorimetric method.

Animal Data

Animal ID	Days Dosed	Lactation status	Description	Chemical Intake Rate	Feed Concentration	Feed Intake Rate	Weight
N327	200	lactating		100 mg/d	10.2 ppm		815 lbs
N277	190	lactating		500 mg/d	35.4 ppm		1138 lbs
N618	190	lactating		500 mg/d	54.2 ppm		727 lbs
N143	190	lactating		1000 mg/d	108.4 ppm		1049 lbs
N493	140	lactating		2000 mg/d	184.0 ppm		865 lbs

Media Concentrations

Day	Beef fat	Beef tissue	Milk fat	Whole milk
Animal ID N327				
200				0.46 ppm / 4%
Animal ID N277				
190				2.8 ppm / 4%
Animal ID N618				
190				3.3 ppm / 4%

Note: Concentration data includes (concentration in reported units / percent fat).

Ely et al., 1952

Journal of Dairy Science. 35: 266

Day	Beef fat	Beef tissue	Milk fat	Whole milk
Animal ID N143				
190				5.7 ppm / 4%
Animal ID N493				
140				8.5 ppm / 4%

Note: Concentration data includes (concentration in reported units / percent fat).

Firestone et al., 1979

Journal of Agricultural and Food Chemistry. 27: 1171

3 lactating Holstein cows were administered 20 mg/kg BW/d of commercial grade pentachlorophenol (PCP) for 10 days (in gelatin capsules) and then 10 mg/kg BW/d for an additional 60 days. A control cow was fed gelatin capsule containing ground corn. Milk samples were collected twice weekly throughout the treatment period and for 13 weeks after treatment ended. PCP in composite whole milk rose to a steady state level of 4 mg/kg during the treatment period. When PCP feeding was stopped, PCP in the milk and blood declined within a few days to basal levels of less than 0.1 mg/kg. Pentachloroanisole (PCA, a metabolite of PCP), hexachlorobenzene (contaminant in PCP), and dioxins (contaminant) were also monitored in milk and blood, and dioxins were also monitored in fat. Note that multiple dioxin and furan congeners were observed in the contaminated feed, but only HxCDD (1,2,3,6,7,8), HpCDD (1,2,3,4,6,7,8), OCDD, and total dioxins appeared in the mlk or tissue samples.

hexachlorobenzene

Experiment Comments: Animal 1 is an average of 3 cows. These cows were exposed to technical grade PCP for 10 days prior to this study period of 60 days. Therefore, dose period recorded as 70 days. Commercial-grade pentachlorophenol contains some hexachlorobenzene As reported in the text, the PCP Composite (MB419) contained 80 mg/kg HCB as measured from a previous study. The chemical intake of HCB, then, is the daily MB419 dose (10 mg/kgBW/d)*80 mg/kg HCB* (1 kg MB419/1E6 mg MB419) = 8E-4 mg/kgBW/d. The body weights were then multiplied to these values to calculate the chemical intake rate in (mg/d). The study reports a decline in HCB similar to dioxins (half-llife=54.1 days). The investigators calculated a Kd of -0.0128

Analytical Method: Milk samples were prepared (details provided in article); hexane extracts were combined for GLC analysis. Presence of HCB was confirmed by GLC-MS analysis. Recovery rates of HCB in fortified mlk samples were approximately 76%

Animal Data

Animal ID	Days Dosed	Lactation status	Description	Chemical Intake Rate	Feed Concentration	Feed Intake Rate	Weight
1	70	lactating	Holstein	0.48 mg/d			598.6 kg

Note: Chemical intake rate also reported as 8e-4mg/kgBW/d. 157 days into lactation.

Media Concentrations

Day	Beef fat	Beef tissue	Milk fat	Whole milk
Animal ID 1				
70			200 ug/kg / 4%	

Note: Concentration data includes (concentration in reported units / percent fat).

HpCDD, 1,2,3,4,6,7,8-

Experiment Comments: Animal 1 is an average of 3 cows. These cows were exposed to technical grade PCP for 10 days prior to this study period of 60 days. Therefore, dose period recorded as 70 days. Commercial-grade pentachlorophenol contains some dioxin. As reported in

Firestone et al., 1979

Journal of Agricultural and Food Chemistry. 27: 1171

Table 2, the PCP Composite (MB419) contained 205 ppm HpCDD as measured from a previous study. The chemical intake of HpCDD, then, is the daily MB419 dose (10 mg/kgBW/d)*205 ppm HxCDD* (1 parts/1E6 parts) = 0.0021 mg/kgBW/d. The body weights were then multiplied to these values to calculate the chemical intake rate in (mg/d). For media concentrations, some data are in Table 5 while others are from the text. In Table 5, the investigators report a calculated half-life of 47.1 days and calculated a Kd of 0.0147.

Analytical Method: Milk samples were prepared (details provided in article); hexane extracts were combined for GLC analysis. Presence of OCDD was confriemd by GLC-MS analysis. . Recovery rates of HpCDD in fortified mlk samples were approximately 85%.

Animal Data

Animal ID	Days Dosed	Lactation status	Description	Chemical Intake Rate	Feed Concentration	Feed Intake Rate	Weight
1	70	lactating	Holstein	1.23 mg/d			598.6 kg

Note: Chemical intake rate also reported as 0.0021mg/kgBW/d. 157 days into lactation.

Media Concentrations

Day	Beef fat	Beef tissue	Milk fat	Whole milk
Animal ID 1				
69	24 ug/kg (Shoulder)		39 ug/kg / 4%	
170	6.6 ug/kg (Shoulder)		6.9 ug/kg / 4%	
235	11.1 ppb (Shoulder. Calved 14 days earlier.)		4.4 ppb / 4% (Calved 14 days earlier.)	

HxCDD, 1,2,3,6,7,8-

Experiment Comments: Animal 1 is an average of 3 cows. These cows were exposed to technical grade PCP for 10 days prior to this study period of 60 days. Therefore, dose period recorded as 70 days. Commercial-grade pentachlorophenol contains some dioxin. As reported in Table 2, the PCP Composite (MB419) contained 10 ppm HxCDD as measured from a previous study. The chemical intake of HxCDD, then, is the daily MB419 dose (10 mg/kgBW/d)*10 ppm HxCDD* (1 parts/1E6 parts) = 1E-4 mg/kgBW/d. The body weights were then multiplied to these values to calculate the chemical intake rate in (mg/d). For media concentrations, some data are in Table 5 while others are from the text. In table 5, the investigators report a caluclated half-life of 50.6 days and a Kd of 0.0137.

Analytical Method: Milk samples were prepared (details provided in article); hexane extracts were combined for GLC analysis. Presence of OCDD was confriemd by GLC-MS analysis. Recovery rates of HxCDD in fortified mlk samples was approximately 85%

Note: Concentration data includes (concentration in reported units / percent fat).

Firestone et al., 1979

Journal of Agricultural and Food Chemistry. 27: 1171

Animal Data

Animal ID	Days Dosed	Lactation status	Description	Chemical Intake Rate	Feed Concentration	Feed Intake Rate	Weight
1	70	lactating	Holstein	0.06 mg/d			598.6 kg

Note: Chemical intake rate also reported as 1E-4mg/kgBW/d. 157 days into lactation.

Media Concentrations

Day	Beef fat	Beef tissue	Milk fat	Whole milk
Animal ID 1				
69	13 ug/kg (Shoulder)		19 ug/kg / 4%	
170	2.5 ug/kg (Shoulder)		4.3 ug/kg / 4%	
235	4.8 ppb (Shoulder. Calved 14 days earlier.)		2.2 ppb / 4% (Calved 14 days earlier.)	

OCDD

Experiment Comments: Animal 1 is an average of 3 cows. These cows were exposed to technical grade PCP for 10 days prior to this study period of 60 days. Therefore, dose period recorded as 70 days. Commercial-grade pentachlorophenol contains some dioxin. As reported in Table 2, the PCP Composite (MB419) contained 690 ppm OCDD as measured from a previous study. The chemical intake of HpCDD, then, is the daily MB419 dose (10 mg/kgBW/d)*690 ppm HxCDD* (1 parts/1E6 parts) = 0.007 mg/kgBW/d. The body weights were then multiplied to these values to calculate the chemical intake rate in (mg/d). For media concentrations, some data are in Table 5 while others are from the text. In table 4, investigators report a hlaf life of 41.3 days and calculated a Kd of -0.0168.

Analytical Method: Milk samples were prepared (details provided in article); hexane extracts were combined for GLC analysis. Presence of OCDD was confriemd by GLC-MS analysis. Recovery rates of OCDD in fortified mlk samples were approximately 72%

Animal Data

Animal ID	Days Dosed	Lactation status	Description	Chemical Intake Rate	Feed Concentration	Feed Intake Rate	Weight
1	70	lactating	Holstein	4.13 mg/d			598.6 kg

Note: Chemical intake rate also reported as 0.007mg/kgBW/d. 157 days into lactation.

Media Concentrations

Day	Beef fat	Beef tissue	Milk fat	Whole milk

Note: Concentration data includes (concentration in reported units / percent fat).

Firestone et al., 1979

Journal of Agricultural and Food Chemistry. 27: 1171

Day	Beef fat	Beef tissue	Milk fat	Whole milk
Animal ID 1				
69	32 ug/kg (Shoulder)		24 ug/kg / 4%	
170	5.6 ug/kg (Shoulder)		3 ug/kg / 4%	
235	6.1 ppb (Shoulder. Calved 14 days earlier.)		3.3 ppb / 4% (Calved 14 days earlier.)	

pentachlorophenol

Experiment Comments: Animal 1 is an average of 3 cows. These cows were exposed to technical grade PCP for 10 days prior to this study period of 60 days. Therefore, dose period recorded as 70 days. Half life is reported at 1.5 days. Study reports a steady state level of 40 mg/kg for PCP.

Analytical Method: Milk samples were prepared (details provided in article); hexane extracts were combined for GLC analysis. Identity of PCP was confirmed by preparation of methyl ether and EC-GLC analysis. Recovery rate of PCP from fortified milk samples was 95%-101%.

Animal Data

Animal ID	Days Dosed	Lactation status	Description	Chemical Intake Rate	Feed Concentration	Feed Intake Rate	Weight
1	70	lactating	Holstein	10 mg/kgBW/d			598.6 kg

Note: 157 days into lactation.

Media Concentrations

Day	Beef fat	Beef tissue	Milk fat	Whole milk
Animal ID 1				
18				4 mg/kg / 4%
60				4 mg/kg / 4% (data presented as combination of all treated cows)

Note: Concentration data includes (concentration in reported units / percent fat).

Fries and Marrow, 1976

Journal of Dairy Science. 59: 475

The uptake and excretion of hexachlorobenzene (HCB) and DDE were studied. HCB is a fat soluble chemical that had been shown to be resistant to metabolism in other species. DDE was included in the study as a reference compound since it had previously been studied in cows. Both chemicals were administered simultaneously to 6 first lactation Holstein cows at either 5 or 25 mg per day. The animals were dosed for 60 days. Concentrations in milk fat were determined every five days during the dosing period and for another 60 days after the contaminated feed was removed. Body fat samples were taken at 30, 60, 90, and 120 days. The purpose of the study was to determine concentrations of these chemicals in milk and body fat due to steady state intake rates. The study was also used to determine rate of elimination once feeding was discontinued using a two compartment model. The data suggested that HCB was more readily absorbed into and excreted from body fat than DDE.

DDE

Experiment Comments: The intake rate and body weights were estimated from the feed concentrations (0.62 and 3.1 mg/kg DW) and the intake rates per body weight (0.010 and 0.05 mg/kgBW) provided in the article. Milk concentrations are the average of the 40th and 60th days. Beef fat data are for the 60th day only. Milk concentrations on day 75 were back-calculated using the day 60 concentration and the % declcine reported. Day 40 milk concentrations were calculated from the average concentration in table 1 and day 60 concentration in Table 2.

Analytical Method: Methods of fat isolation and cleanup followed standard multiresidue pesticide methodology as described in official methods of analysis of the Association of Official Analytical Chemists (1970). Residues of HCB and DDE were determined by GLC; with electron capture detection. Recovery rates of both compounds were above 90% and no corrections were made for recovery.

Animal Data

Animal ID	Days Dosed	Lactation status	Description	Chemical Intake Rate	Feed Concentration	Feed Intake Rate	Weight
1	60	lactating	First lactation Holstein	5 mg/d	0.62 mg/kg	8.1 kgDW/d	500 kg
Note: Chemical intake rate also reported as 0.01mg/kgBW/d.							
2	60	lactating	First lactation Holstein	5 mg/d	0.62 mg/kg	8.1 kgDW/d	500 kg
Note: Chemical intake rate also reported as 0.01mg/kgBW/d.							
3	60	lactating	First lactation Holstein	5 mg/d	0.62 mg/kg	8.1 kgDW/d	500 kg
Note: Chemical intake rate also reported as 0.01mg/kgBW/d.							
4	60	lactating	First lactation Holstein	25 mg/d	3.1 mg/kg	8.1 kgDW/d	490 kg
Note: Chemical intake rate also reported as 0.051mg/kgBW/d. Animal was injured during study and milk production dropped off.							
5	60	lactating	First lactation Holstein	25 mg/d	3.1 mg/kg	8.1 kgDW/d	490 kg
Note: Chemical intake rate also reported as 0.051mg/kgBW/d.							
6	60	lactating	First lactation Holstein	25 mg/d	3.1 mg/kg	8.1 kgDW/d	490 kg
Note: Chemical intake rate also reported as 0.051mg/kgBW/d.							

Media Concentrations

Note: Concentration data includes (concentration in reported units / percent fat).

Fries and Marrow, 1976

Journal of Dairy Science. 59: 475

Day	Beef fat	Beef tissue	Milk fat	Whole milk
Animal ID 1				
60	1.91 mg/kg		1.81 mg/kg (from Table 2)	
75			1.01 mg/kg	
Animal ID 2				
60	1.17 mg/kg		2.2 mg/kg (from Table 2)	
75			0.88 mg/kg	
Animal ID 3				
60	1.04 mg/kg		2.06 mg/kg (from Table 2)	
75			0.97 mg/kg (Calculated with day 60 concentration and % decline in Table 2.)	
Animal ID 4				
60	10.26 mg/kg			
Animal ID 5				
40			9.08 mg/kg	
60	7.91 mg/kg		10.4 mg/kg (from Table 2)	
75			5.62 mg/kg (Calculated with day 60 concentration and % decline in Table 2.)	
Animal ID 6				
40			6.64 mg/kg	
60	5.77 mg/kg		7.62 mg/kg (from Table 2)	
75			3.58 mg/kg (Calculated with day 60 concentration and % decline in Table 2.)	

hexachlorobenzene

Experiment Comments: The intake rate and body weights were estimated from the feed concentrations (0.62 and 3.1 mg/kg DW) and the intake rates per body weight (0.010 and 0.05 mg/kg BW) provided in the article. Milk concentrations for days 40 and 75 are back calculated based on data on day 60 and percentage declines. Beef fat data are for the 60th day only.

Analytical Method: Methods of fat isolation and cleanup followed standard multiresidue pesticide methodology as described in official methods of analysis of the Association of Official Analytical Chemists (1970). Residues of HCB and DDE were determined by GLC with electron capture detection.

Note: Concentration data includes (concentration in reported units / percent fat).

Fries and Marrow, 1976

Journal of Dairy Science. 59: 475

Animal Data

Animal ID	Days Dosed	Lactation status	Description	Chemical Intake Rate	Feed Concentration	Feed Intake Rate	Weight
1	60	lactating	First lactation Holstein	5 mg/d	0.62 mg/kg	8.1 kgDW/d	500 kg
2	60	lactating	First lactation Holstein	5 mg/d	0.62 mg/kg	8.1 kgDW/d	500 kg
3	60	lactating	First lactation Holstein	5 mg/d	0.62 mg/kg	8.1 kgDW/d	500 kg
4	60	lactating	First lactation Holstein	25 mg/d	3.1 mg/kg	8.1 kgDW/d	490 kg
Note: Animal was injured during study and milk production dropped off.							
5	60	lactating	First lactation Holstein	25 mg/d	3.1 mg/kg	8.1 kgDW/d	490 kg
6	60	lactating	First lactation Holstein	25 mg/d	3.1 mg/kg	8.1 kgDW/d	490 kg

Media Concentrations

Day	Beef fat	Beef tissue	Milk fat	Whole milk
Animal ID 1				
60	2.10 mg/kg		2.09 mg/kg	(from Table 2)
75			1.5 mg/kg	
Animal ID 2				
60	2.04 mg/kg		2.54 mg/kg	(from Table 2)
75			1.52 mg/kg	
Animal ID 3				
60	1.60 mg/kg		2.15 mg/kg	(from Table 2)
75			1.44 mg/kg	
Animal ID 4				
60	11.49 mg/kg			
Animal ID 5				
60	8.59 mg/kg		9.85 mg/kg	(from Table 2)
75			7.09 mg/kg	
Animal ID 6				
60	6.33 mg/kg		6.97 mg/kg	(from Table 2)
75			4.67 mg/kg	

Note: Concentration data includes (concentration in reported units / percent fat).

Fries et al., 1973

Journal of Agricultural and Food Chemistry. 21: 117

In this study, 9 cows were fed 200 mg of Aroclor 1245 for 60 days. The study was conducted to determine concentrations in cows for a fixed intake rate and to determine the rate of decline in concentrations after feeding stopped. The authors present a two-component first-order system to describe the decline in milk concentrations after feeding had ceased. Data were used to calculate loss constants for the model. At the end of the feeding period, the animals all had similar concentrations in milk fat; however, rates of decline for levels in milk fat showed more variability among animals. The authors could not relate this to either milk fat production or body weight change, and it was noted that all of the animals were gaining weight during the study. It was suggested that the amount of body fat in an animal may influence the rate of chemical loss. For example, the larger the body fat pool for a given animal, the lower the concentration.

aroclor 1254

Experiment Comments: The feed concentration was estimated using concentration and intake rate. Weight change is for 15 to 60 days post-feeding.. Milk samples on day 60 are actually averages of days 40-60. Day 75 concentrations are back-calculated using the % decline.

Analytical Method: Cleaned and isolated milk and biopsy samples using U.S. FDA (1968) multipesticide residue methodology. Used GLC using Ni-electron capture detector. Chromatograms of aroclor 1254 standards were compared to peaks in beef and milk samples to quantify concentrations in samples. Milk samples were analyzed prior to the feeding study and no PCB residues or interferences were reported. Detection limits were not reported; however concentrations in most samples were said to be relatively high.

Animal Data

Animal ID	Days Dosed	Lactation status	Description	Chemical Intake Rate	Feed Concentration	Feed Intake Rate	Weight
1	60	lactating	First lactation Holstein	200 mg/d	12.6 mg/kg	15.9 kgDW/d	559 kg
2	60	lactating	First lactation Holstein	200 mg/d	12.3 mg/kg	16.3 kgDW/d	538 kg
3	60	lactating	First lactation Holstein	200 mg/d	13.3 mg/kg	15 kgDW/d	557 kg
4	60	lactating	First lactation Holstein	200 mg/d	12.1 mg/kg	16.5 kgDW/d	537 kg
5	60	lactating	First lactation Holstein	200 mg/d	12.7 mg/kg	15.8 kgDW/d	577 kg
6	60	lactating	First lactation Holstein	200 mg/d	11.2 mg/kg	17.9 kgDW/d	528 kg
7	60	lactating	First lactation Holstein	200 mg/d	11.2 mg/kg	17.8 kgDW/d	587 kg
8	60	lactating	First lactation Holstein	200 mg/d	12.3 mg/kg	16.3 kgDW/d	495 kg
9	60	lactating	First lactation Holstein	200 mg/d	11.7 mg/kg	17.1 kgDW/d	507 kg

Media Concentrations

Day	Beef fat	Beef tissue	Milk fat	Whole milk

Note: Concentration data includes (concentration in reported units / percent fat).

Fries et al., 1973

Journal of Agricultural and Food Chemistry. 21: 117

Day	Beef fat	Beef tissue	Milk fat	Whole milk
Animal ID 1				
60	34.5 mg/kg		59.2 mg/kg / 4.1%	
75			25.5 mg/kg / 4.1%	
Animal ID 2				
60	39.0 mg/kg		58.3 mg/kg / 4.1%	
75			26.2 mg/kg / 4.1%	
Animal ID 3				
60	39.5 mg/kg		57.9 mg/kg / 4.3%	
75			26.1 mg/kg / 4.3%	
Animal ID 4				
60	25.3 mg/kg		60.1 mg/kg / 3.9%	
75			21.6 mg/kg / 3.9%	
Animal ID 5				
60	54.0 mg/kg		64.2 mg/kg / 4.2%	
75			29.5 mg/kg / 4.2%	
Animal ID 6				
60	53.2 mg/kg		63.8 mg/kg / 3.8%	
75			30.6 mg/kg / 3.8%	
Animal ID 7				
60	37.1 mg/kg		56.6 mg/kg / 3.9%	
75			23.8 mg/kg / 3.9%	
Animal ID 8				
60	32.3 mg/kg		57.6 mg/kg / 3.5%	
75			24.2 mg/kg / 3.5%	
Animal ID 9				
60	60.2 mg/kg		70.6 mg/kg / 3.4%	
75			36.0 mg/kg / 3.4%	

Note: Concentration data includes (concentration in reported units / percent fat).

Fries and Marrow, 1977

Journal of Animal Science. 45: 1160

Hereford steers were fed hexachlorobenzene and DDE at 2 ppm for four weeks. Cows were slaughtered at 2 weeks, 4 weeks, and 2 weeks after dosing ended. Patterns of DDE distribution were similar to those of HCB but the levels of DDE were only 90% of HCB. The study found significant differences in HCB residue levels in the 8 fat depots measured. There were no significant differences in the residue levels of fat in 9 retail cuts thought the fat contents varied significantly.

DDE

Experiment Comments: Data are averages of 2 animals. Media concentration data are retail cuts.

Analytical Method: DDE was fed in the complete finishing diet. Samples were analyzed by GC, with recovery routinely greater than 90%

Animal Data

Animal ID	Days Dosed	Lactation status	Description	Chemical Intake Rate	Feed Concentration	Feed Intake Rate	Weight
1	28	non-lactating	Hereford steers	28.8 mg/d	2 ppm	14.4 kgDW/d	400 kg

Media Concentrations

Day	Beef fat	Beef tissue	Milk fat	Whole milk
Animal ID 1				
14	3.29 ppm / 21.9% (rib steak)			
14	2.86 ppm / 11.2% (sirloin steak)			
14	2.98 ppm / 16.3% (T-bone steak)			
14	2.51 ppm / 15.1% (brisket)			
14	2.85 ppm / 17.9% (blade chuck)			
14	2.78 ppm / 7.7% (bottom roast)			
14	2.58 ppm / 10.6% (tip roast)			
14	2.74 ppm / 31.3% (short plate)			
14	3.36 ppm / 10.4% (flank steak)			
28	5.31 ppm / 16.3% (T-bone steak)			

Note: Concentration data includes (concentration in reported units / percent fat).

Fries and Marrow, 1977

Journal of Animal Science. 45: 1160

Day	Beef fat	Beef tissue	Milk fat	Whole milk
28	4.74 ppm / 7.7% (bottom roast)			
28	4.92 ppm / 15.1% (brisket)			
28	5.22 ppm / 11.2% (sirloin steak)			
28	5.22 ppm / 31.3% (short plate)			
28	5.26 ppm / 17.9% (blade chuck)			
28	5.32 ppm / 21.9% (rib steak)			
28	5.46 ppm / 10.4% (flank steak)			
28	4.72 ppm / 10.6% (tip roast)			
42	4.28 ppm / 10.4% (flank steak)			
42	4.29 ppm / 21.9% (rib steak)			
42	4.40 ppm / 10.6% (tip roast)			
42	4.67 ppm / 15.1% (brisket)			
42	4.60 ppm / 11.2% (sirloin steak)			
42	4.27 ppm / 7.7% (bottom roast)			
42	4.63 ppm / 16.3% (T-bone steak)			
42	4.84 ppm / 31.3% (short plate)			
42	4.97 ppm / 17.9% (blade chuck)			

hexachlorobenzene

Experiment Comments: Data are averages of 2 animals. Media concentration data are retail cuts.

Analytical Method: HCB was fed in the complete finishing diet. Samples were analyzed by GC, with recovery routinely greater than 90%

Animal Data

Note: Concentration data includes (concentration in reported units / percent fat).

Fries and Marrow, 1977

Journal of Animal Science. 45: 1160

Animal ID	Days Dosed	Lactation status	Description	Chemical Intake Rate	Feed Concentration	Feed Intake Rate	Weight
1	28	non-lactating	Hereford steers	28.8 mg/d	2 ppm	14.4 kgDW/d	400 kg

Media Concentrations

Day	Beef fat	Beef tissue	Milk fat	Whole milk
Animal ID 1				
14	3.04 ppm / 16.3% (T-bone steak)			
14	3.05 ppm / 31.3% (short plate)			
14	2.91 ppm / 10.6% (tip roast)			
14	3.01 ppm / 11.2% (sirloin steak)			
14	3.02 ppm / 7.7% (bottom roast)			
14	2.90 ppm / 15.1% (brisket)			
14	3.03 ppm / 17.9% (blade chuck)			
14	3.24 ppm / 10.4% (flank steak)			
14	3.35 ppm / 21.9% (rib steak)			
28	6.02 ppm / 10.4% (flank steak)			
28	5.68 ppm / 17.9% (blade chuck)			
28	5.7 ppm / 21.9% (rib steak)			
28	5.58 ppm / 16.3% (T-bone steak)			
28	5.45 ppm / 10.6% (tip roast)			
28	5.67 ppm / 11.2% (sirloin steak)			
28	5.69 ppm / 15.1% (brisket)			
28	5.26 ppm / 7.7% (bottom roast)			
28	5.85 ppm / 31.3% (short plate)			
42	4.55 ppm / 21.9% (rib			

Note: Concentration data includes (concentration in reported units / percent fat).

Fries and Marrow, 1977

Journal of Animal Science. 45: 1160

Day	Beef fat	Beef tissue	Milk fat	Whole milk
	steak)			
42	4.47 ppm / 7.7% (bottom roast)			
42	4.80 ppm / 11.2% (sirloin steak)			
42	5.14 ppm / 15.1% (brisket)			
42	4.86 ppm / 16.3% (T-bone steak)			
42	4.70 ppm / 10.4% (flank steak)			
42	5.35 ppm / 31.3% (short plate)			
42	4.71 ppm / 10.6% (tip roast)			
42	5.46 ppm / 17.9% (blade chuck)			

Note: Concentration data includes (concentration in reported units / percent fat).

Fries et al., 1969

Jounal of Dairy Science. 52: 1800

Three groups of cows were fed p,p'-DDT, p,p'-DDD, or p,p'-DDE for 60 days at 25 mg/d. Concentrations in the milk fat approached, but did not reach, equilibrium. The purpose of the study was to compare body retention and milk excretion of the 3 analogs when fed as pure compounds.

DDD

Experiment Comments: Information reported are mean values from 40-60 days of continuous intake.

Analytical Method: The compound was dissolved in acetone and added to the concentrate feed. Milk samples were collected regularly and body fat biopsy samples were taken at 20 d intervals. Samples were analyzed by electron capture gas chromatography and fat determinations were made by the Babcock method.

Animal Data

Animal ID	Days Dosed	Lactation status	Description	Chemical Intake Rate	Feed Concentration	Feed Intake Rate	Weight
4	60	lactating		25 mg/d		17.9 kgDW/d	
5	60	lactating		25 mg/d		17.9 kgDW/d	
6	60	lactating		25 mg/d		17.9 kgDW/d	

Media Concentrations

Day	Beef fat	Beef tissue	Milk fat	Whole milk
Animal ID 4				
60			1.59 mg/kg	
Animal ID 5				
60			1.85 mg/kg	
Animal ID 6				
60			1.95 mg/kg	

DDE

Experiment Comments: Information reported are mean values from 40-60 days of continuous intake.

Analytical Method: The compound was dissolved in acetone and added to the concentrate feed. Milk samples were collected regularly and body fat biopsy samples were taken at 20 d intervals. Samples were analyzed by electron capture gas chromatography and fat determinations were made by the Babcock method.

Note: Concentration data includes (concentration in reported units / percent fat).

Fries et al., 1969

Jounal of Dairy Science. 52: 1800

Animal Data

Animal ID	Days Dosed	Lactation status	Description	Chemical Intake Rate	Feed Concentration	Feed Intake Rate	Weight
7	60	lactating		25 mg/d		17.9 kgDW/d	
8	60	lactating		25 mg/d		17.9 kgDW/d	
9	60	lactating		25 mg/d		17.9 kgDW/d	

Media Concentrations

Day	Beef fat	Beef tissue	Milk fat	Whole milk
Animal ID 7				
60			5.76 mg/kg	
Animal ID 8				
60			8.10 mg/kg	
Animal ID 9				
60			6.41 mg/kg	

DDT

Experiment Comments: Information reported are mean values from 40-60 days of continuous intake.

Analytical Method: The compound was dissolved in acetone and added to the concentrate feed. Milk samples were collected regularly and body fat biopsy samples were taken at 20 d intervals. Samples were analyzed by electron capture gas chromatography and fat determinations were made by the Babcock method.

Animal Data

Animal ID	Days Dosed	Lactation status	Description	Chemical Intake Rate	Feed Concentration	Feed Intake Rate	Weight
1	60	lactating		25 mg/d		17.9 kgDW/d	
2	60	lactating		25 mg/d		17.9 kgDW/d	
3	60	lactating		25 mg/d		17.9 kgDW/d	

Media Concentrations

Day	Beef fat	Beef tissue	Milk fat	Whole milk

Note: Concentration data includes (concentration in reported units / percent fat).

Fries et al., 1969

Jounal of Dairy Science. 52: 1800

Day	Beef fat	Beef tissue	Milk fat	Whole milk
Animal ID 1				
60			0.5 mg/kg	
Animal ID 2				
60			0.62 mg/kg	
Animal ID 3				
60			0.39 mg/kg	

DDT

Experiment Comments: Data are an average of 4 cows and an average of days 10-20, when steady state appeared to have been reached.

Analytical Method: Two groups of 4 cows were fed 100 mg of o,p'-DDT or p,p'-DDT per day. Pesticides were fed with the concentrate. No further description on methods was provided.

Animal Data

Animal ID	Days Dosed	Lactation status	Description	Chemical Intake Rate	Feed Concentration	Feed Intake Rate	Weight
2	20	lactating	Holstein	100 mg/d			
Note: p,p'-DDT							

Media Concentrations

Day	Beef fat	Beef tissue	Milk fat	Whole milk
Animal ID 2				
20			2.47 mg/kg (7.68 mg/kg for DDD)	
35			0.73 mg/kg	

Note: Concentration data includes (concentration in reported units / percent fat).

Gannon et al., 1959c

Journal of Agricultural and Food Chemistry. 7: 826

Dieldrin was fed to various animals for 12 weeks at 0.1, 0.25, 0.75, and 2.25 ppm. In samples, residues were proportional to fat content of the tissues. Steers stored more dieldrin in their tissue in ppm than hogs and lambs.

dieldrin

Experiment Comments: All steers were Black Angus.

Analytical Method: Toxicant used was undiluted technical dieldrin. It was dissolved in acetone and added to feed. A colorimetric method was used to determine microgram quantities in food.

Animal Data

Animal ID	Days Dosed	Lactation status	Description	Chemical Intake Rate	Feed Concentration	Feed Intake Rate	Weight
1	84	non-lactating	Black Angus		0.1 ppm		
Note: average of 3 steers							
2	84	non-lactating	Black Angus		0.25 ppm		
Note: average of 3 steers							
3	84	non-lactating	Black Angus		0.75 ppm		
Note: average of 3 steers							
4	84	non-lactating	Black Angus		2.25 ppm		
Note: average of 3 steers							

Media Concentrations

Day	Beef fat	Beef tissue	Milk fat	Whole milk
Animal ID 1				
84	0.3 ppm			
126	0.3 ppm			
Animal ID 2				
84	0.8 ppm			
126	0.7 ppm			
Animal ID 3				
84	3.0 ppm			
126	3.4 ppm			

Note: Concentration data includes (concentration in reported units / percent fat).

Gannon et al., 1959c

Journal of Agricultural and Food Chemistry. 7: 826

Day	Beef fat	Beef tissue	Milk fat	Whole milk
Animal ID 4				
84	7.8 ppm			
126	4.9 ppm			

Note: Concentration data includes (concentration in reported units / percent fat).

Gannon et al., 1959b

Journal of Agricultural and Food Chemistry. 7: 829

Aldrin, dieldrin, heptachlor, DDT, and methoxychlor were fed to dairy cows for 16 weeks. Milk samples were analyzed throughout the experiment to determine rates of accumulation and decline for each chemical. The rates of accumulation were: aldrin (excreted as dieldrin)>diledrin>DDT>heptachlor (excreted as heptachlor epoxide)>methoxychlor. Animals were studied for nearly 6 weeks after feeding stopped.

DDT

Experiment Comments: All milk analytical results were adjusted for 4% butterfat content and were corrected for checks. Milk samples are averages from 4 consecutive milkings.

Analytical Method: Milk samples were extracted with n-hexane and DDT was separated from butterfat by chromatography. Analyses were run with Pontoriero and Ginsburg's methods.

Animal Data

Animal ID	Days Dosed	Lactation status	Description	Chemical Intake Rate	Feed Concentration	Feed Intake Rate	Weight
11	112	lactating	Holstein		200 ppm		
12	112	lactating	Holstein		100 ppm		
Note: Animal was sacrificed and body fat samples taken at end of feeding period.							
13	112	lactating	Holstein		25 ppm		
14	112	lactating	Holstein		10 ppm		

Media Concentrations

Day	Beef fat	Beef tissue	Milk fat	Whole milk
Animal ID 11				
1				0.65 ppm / 4%
2				2.80 ppm / 4%
3				2.97 ppm / 4%
7				3.67 ppm / 4%
14				3.19 ppm / 4%
28				3.24 ppm / 4%
42				4.62 ppm / 4%
49				3.64 ppm / 4%
56				5.91 ppm / 4%
63				5.66 ppm / 4%

Note: Concentration data includes (concentration in reported units / percent fat).

Gannon et al., 1959b

Journal of Agricultural and Food Chemistry. 7: 829

Day	Beef fat	Beef tissue	Milk fat	Whole milk
70				4.53 ppm / 4%
77				5.32 ppm / 4%
84				6.07 ppm / 4%
91				4.58 ppm / 4%
98				5.39 ppm / 4%
105				4.51 ppm / 4%
112				6.00 ppm / 4%
113				4.60 ppm / 4%
116				2.13 ppm / 4%
119				1.61 ppm / 4%
122				1.05 ppm / 4%
125				0.83 ppm / 4%
128				0.66 ppm / 4%
Animal ID 12				
1				0.52 ppm / 4%
2				2.07 ppm / 4%
3				2.04 ppm / 4%
7				1.93 ppm / 4%
14				3.28 ppm / 4%
28				2.60 ppm / 4%
42				3.27 ppm / 4%
49				3.65 ppm / 4%
56				4.69 ppm / 4%
63				4.31 ppm / 4%
70				4.58 ppm / 4%
77				3.81 ppm / 4%
84				4.60 ppm / 4%
91				3.95 ppm / 4%
98				3.86 ppm / 4%
105				3.35 ppm / 4%
112	65.4 ppm			4.06 ppm / 4%

Note: Concentration data includes (concentration in reported units / percent fat).

Gannon et al., 1959b

Journal of Agricultural and Food Chemistry. 7: 829

Day	Beef fat	Beef tissue	Milk fat	Whole milk
Animal ID 13				
7				0.58 ppm / 4%
14				0.73 ppm / 4%
28				1.01 ppm / 4%
42				1.25 ppm / 4%
49				1.74 ppm / 4%
56				2.18 ppm / 4%
63				1.56 ppm / 4%
70				2.16 ppm / 4%
77				2.33 ppm / 4%
84				2.64 ppm / 4%
91				2.11 ppm / 4%
98				2.72 ppm / 4%
105				2.21 ppm / 4%
112				2.29 ppm / 4%
113				2.51 ppm / 4%
116				1.12 ppm / 4%
119				0.88 ppm / 4%
122				0.60 ppm / 4%
125				0.39 ppm / 4%
128				0.16 ppm / 4%
Animal ID 14				
7				0.28 ppm / 4%
14				0.33 ppm / 4%
28				0.33 ppm / 4%
42				0.47 ppm / 4%
49				0.57 ppm / 4%
56				0.48 ppm / 4%
63				0.52 ppm / 4%
70				0.61 ppm / 4%
77				0.44 ppm / 4%

Note: Concentration data includes (concentration in reported units / percent fat).

Gannon et al., 1959b

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Day	Beef fat	Beef tissue	Milk fat	Whole milk
84				0.60 ppm / 4%
91				0.66 ppm / 4%
98				0.64 ppm / 4%
105				0.59 ppm / 4%
112				0.63 ppm / 4%
113				0.73 ppm / 4%
116				0.49 ppm / 4%
119				0.36 ppm / 4%
122				0.05 ppm / 4%

dieldrin

Experiment Comments: Dieldrin formulated in acetone and pipetted into the rations (hay and grain). Cows were Guernsey or Holstein, plus one Shorthorn. Each milk record is the average of 4 cows. The beef data are the average of 2 cows.

Analytical Method: A colorimetric method was used. Recovery ranged from 90% to 120%.

Animal Data

Animal ID	Days Dosed	Lactation status	Description	Chemical Intake Rate	Feed Concentration	Feed Intake Rate	Weight
4	84	lactating	Guernsey, Shorthorn, or Holstein		0.1 ppm		
5	84	lactating	Guernsey, Shorthorn, or Holstein		0.25 ppm		
6	84	lactating	Guernsey, Shorthorn, or Holstein		0.75 ppm		
7	84	lactating	Guernsey, Shorthorn, or Holstein		2.25 ppm		

Media Concentrations

Day	Beef fat	Beef tissue	Milk fat	Whole milk	
Animal ID 4					
56				0.01 ppm / 4%	
84	0.2 ppm (body fat)			0.02 ppm / 4%	
112				0.03 ppm / 4%	(Two cows)

Note: Concentration data includes (concentration in reported units / percent fat).

Gannon et al., 1959a

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Day	Beef fat		Beef tissue	Milk fat	Whole milk	
126	0.3 ppm					
Animal ID 5						
7					0.02 ppm / 4%	
14					0.02 ppm / 4%	
28					0.02 ppm / 4%	
56					0.03 ppm / 4%	
84	0.9 ppm	(body fat)			0.06 ppm / 4%	
112					0.02 ppm / 4%	(Two cows)
126	0.4 ppm				0.01 ppm / 4%	(Two cows)
Animal ID 6						
3					0.04 ppm / 4%	
7					0.04 ppm / 4%	
14					0.06 ppm / 4%	
28					0.07 ppm / 4%	
56					0.11 ppm / 4%	
84	1.7 ppm	(body fat)			0.11 ppm / 4%	
112					0.15 ppm / 4%	(Two cows)
126	0.9 ppm				0.04 ppm / 4%	(Two cows)
Animal ID 7						
3					0.06 ppm / 4%	
7					0.16 ppm / 4%	
14					0.17 ppm / 4%	
28					0.16 ppm / 4%	
56					0.18 ppm / 4%	
84	4.8 ppm	(body fat)			0.28 ppm / 4%	
112					0.21 ppm / 4%	(Two cows)
126	3.8 ppm				0.04 ppm / 4%	(Two cows)

dieldrin

Experiment Comments: All milk analytical results were adjusted for 4% butterfat content and were corrected for checks. These data actually measure dieldrin, but the chemical that was fed was aldrin. Aldrin is readily metabolized to dieldrin. Milk samples are averages from 4

Note: Concentration data includes (concentration in reported units / percent fat).

Gannon et al., 1959b

Journal of Agricultural and Food Chemistry. 7: 829

consecutive milkings.

Analytical Method: Milk samples from cows were cleaned and analyzed for dieldrin according to the Shell method series. All insecticides were applied to feed dissolved in an acetone solution so that 1 mL of solution was sufficient to reach the desired ppm in 1 pound of feed

Animal Data

Animal ID	Days Dosed	Lactation status	Description	Chemical Intake Rate	Feed Concentration	Feed Intake Rate	Weight
1	112	lactating	Holstein		40 ppm		
2	112	lactating	Holstein		10 ppm		
Note: Animal was sacrificed at end of 16 weeks and body fat sampled and analyzed.							
3	112	lactating	Holstein		1 ppm		

Media Concentrations

Day	Beef fat	Beef tissue	Milk fat	Whole milk
Animal ID 1				
1				0.06 ppm / 4%
2				1.49 ppm / 4%
3				2.82 ppm / 4%
7				5.22 ppm / 4%
14				9.80 ppm / 4%
28				10.01 ppm / 4%
42				12.46 ppm / 4%
49				12.27 ppm / 4%
56				14.96 ppm / 4%
70				15.45 ppm / 4%
77				13.66 ppm / 4%
91				13.75 ppm / 4%
98				14.57 ppm / 4%
105				13.95 ppm / 4%
112				16.10 ppm / 4%
113				12.00 ppm / 4%
119				9.07 ppm / 4%

Note: Concentration data includes (concentration in reported units / percent fat).

Gannon et al., 1959b

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Day	Beef fat	Beef tissue	Milk fat	Whole milk
126				5.00 ppm / 4%
133				0.98 ppm / 4%
140				0.77 ppm / 4%
147				0.73 ppm / 4%
Animal ID 2				
2				0.31 ppm / 4%
3				0.82 ppm / 4%
7				1.18 ppm / 4%
14				1.04 ppm / 4%
28				2.69 ppm / 4%
42				2.41 ppm / 4%
49				2.22 ppm / 4%
56				2.39 ppm / 4%
70				2.51 ppm / 4%
84				2.45 ppm / 4%
91				2.35 ppm / 4%
98				2.09 ppm / 4%
105				1.94 ppm / 4%
112	31.58 ppm			3.42 ppm / 4%
Animal ID 3				
3				0.09 ppm / 4%
7				0.12 ppm / 4%
14				0.18 ppm / 4%
28				0.32 ppm / 4%
42				0.27 ppm / 4%
49				0.28 ppm / 4%
56				0.33 ppm / 4%
70				0.39 ppm / 4%
77				0.33 ppm / 4%
84				0.33 ppm / 4%
91				0.35 ppm / 4%
98				0.37 ppm / 4%

Note: Concentration data includes (concentration in reported units / percent fat).

Gannon et al., 1959b

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Day	Beef fat	Beef tissue	Milk fat	Whole milk
105				0.35 ppm / 4%
112				0.41 ppm / 4%
113				0.39 ppm / 4%
119				0.35 ppm / 4%
126				0.23 ppm / 4%
133				0.19 ppm / 4%
140				0.18 ppm / 4%
147				0.12 ppm / 4%
151				0.08 ppm / 4%

dieldrin

Experiment Comments: All milk analytical results were adjusted for 4% butterfat content and were corrected for checks. Milk samples are averages from 4 consecutive milkings.

Analytical Method: Milk samples from cows were cleaned and analyzed for dieldrin according to the Shell method series.

Animal Data

Animal ID	Days Dosed	Lactation status	Description	Chemical Intake Rate	Feed Concentration	Feed Intake Rate	Weight
4	112	lactating	Holstein		75 ppm		
5	112	lactating	Holstein		50 ppm		
Note: At end of 16 week feeding, animal was sacrificed and body fat samples taken.							
6	112	lactating	Holstein		10 ppm		

Media Concentrations

Day	Beef fat	Beef tissue	Milk fat	Whole milk
Animal ID 4				
1				0.07 ppm / 4%
2				0.17 ppm / 4%
7				1.61 ppm / 4%
14				2.32 ppm / 4%
28				6.68 ppm / 4%
42				9.20 ppm / 4%

Note: Concentration data includes (concentration in reported units / percent fat).

Gannon et al., 1959b

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Day	Beef fat	Beef tissue	Milk fat	Whole milk
56				12.33 ppm / 4%
70				13.02 ppm / 4%
84				12.89 ppm / 4%
98				13.35 ppm / 4%
112				13.36 ppm / 4%
Animal ID 5				
1				0.08 ppm / 4%
2				0.15 ppm / 4%
3				2.11 ppm / 4%
7				2.18 ppm / 4%
14				3.57 ppm / 4%
28				3.86 ppm / 4%
42				8.93 ppm / 4%
49				8.94 ppm / 4%
56				10.32 ppm / 4%
70				8.22 ppm / 4%
77				10.08 ppm / 4%
84				9.40 ppm / 4%
91				9.47 ppm / 4%
98				11.10 ppm / 4%
105				12.10 ppm / 4%
112	123.7 ppm			10.96 ppm / 4%
Animal ID 6				
2				0.09 ppm / 4%
3				0.31 ppm / 4%
7				1.10 ppm / 4%
14				1.22 ppm / 4%
28				1.27 ppm / 4%
42				1.66 ppm / 4%
49				1.62 ppm / 4%
56				1.15 ppm / 4%
70				1.18 ppm / 4%

Note: Concentration data includes (concentration in reported units / percent fat).

Gannon et al., 1959b

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Day	Beef fat	Beef tissue	Milk fat	Whole milk
77				1.03 ppm / 4%
84				1.19 ppm / 4%
91				1.22 ppm / 4%
98				1.71 ppm / 4%
105				1.37 ppm / 4%
112				1.78 ppm / 4%
113				1.26 ppm / 4%
119				0.76 ppm / 4%
126				0.69 ppm / 4%
133				0.47 ppm / 4%
140				0.34 ppm / 4%
147				0.28 ppm / 4%
151				0.19 ppm / 4%

heptachlor epoxide

Experiment Comments: All milk analytical results were adjusted for 4% butterfat content and were corrected for checks. Milk samples are averages from 4 consecutive milkings.

Analytical Method: The epoxide was determined by extraction and then by reacting it with a reagent designed by Polen and Silverman.

Animal Data

Animal ID	Days Dosed	Lactation status	Description	Chemical Intake Rate	Feed Concentration	Feed Intake Rate	Weight
7	112	lactating	Holstein		200 ppm		
8	112	lactating	Holstein		100 ppm		
Note: Animal was slaughtered at end of 16 week experiment, and body fat analyzed.							
9	112	lactating	Holstein		75 ppm		
10	112	lactating	Holstein		50 ppm		

Media Concentrations

Day	Beef fat	Beef tissue	Milk fat	Whole milk
Animal ID 7				
1				0.15 ppm / 4%

Note: Concentration data includes (concentration in reported units / percent fat).

Gannon et al., 1959b

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Day	Beef fat	Beef tissue	Milk fat	Whole milk
2				0.32 ppm / 4%
3				0.64 ppm / 4%
7				1.40 ppm / 4%
14				1.79 ppm / 4%
28				1.87 ppm / 4%
42				2.29 ppm / 4%
49				2.77 ppm / 4%
56				3.20 ppm / 4%
70				3.87 ppm / 4%
84				3.73 ppm / 4%
91				4.20 ppm / 4%
98				4.20 ppm / 4%
105				4.27 ppm / 4%
112				4.14 ppm / 4%
113				3.93 ppm / 4%
115				3.97 ppm / 4%
117				3.50 ppm / 4%
119				3.33 ppm / 4%
121				3.37 ppm / 4%
123				3.19 ppm / 4%
125				3.09 ppm / 4%
127				2.20 ppm / 4%
129				1.81 ppm / 4%
Animal ID 8				
1				0.07 ppm / 4%
2				0.13 ppm / 4%
3				0.15 ppm / 4%
7				0.60 ppm / 4%
14				0.60 ppm / 4%
28				0.81 ppm / 4%
42				1.39 ppm / 4%
49				0.93 ppm / 4%

Note: Concentration data includes (concentration in reported units / percent fat).

Gannon et al., 1959b

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Day	Beef fat	Beef tissue	Milk fat	Whole milk
70				1.17 ppm / 4%
84				1.19 ppm / 4%
91				1.41 ppm / 4%
98				1.71 ppm / 4%
105				1.08 ppm / 4%
112	17.24 ppm			1.86 ppm / 4%
Animal ID 9				
3				0.07 ppm / 4%
7				0.32 ppm / 4%
14				0.36 ppm / 4%
28				0.44 ppm / 4%
42				0.53 ppm / 4%
49				0.51 ppm / 4%
56				0.79 ppm / 4%
70				0.87 ppm / 4%
84				0.92 ppm / 4%
91				1.25 ppm / 4%
98				1.37 ppm / 4%
105				0.97 ppm / 4%
112				1.52 ppm / 4%
113				1.50 ppm / 4%
115				1.33 ppm / 4%
117				1.25 ppm / 4%
119				1.03 ppm / 4%
121				0.85 ppm / 4%
123				0.81 ppm / 4%
125				0.79 ppm / 4%
127				0.61 ppm / 4%
129				0.44 ppm / 4%
Animal ID 10				
3				0.05 ppm / 4%
7				0.24 ppm / 4%

Note: Concentration data includes (concentration in reported units / percent fat).

Gannon et al., 1959b

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Day	Beef fat	Beef tissue	Milk fat	Whole milk
14				0.29 ppm / 4%
28				0.39 ppm / 4%
42				0.47 ppm / 4%
49				0.39 ppm / 4%
56				0.41 ppm / 4%
70				0.69 ppm / 4%
84				0.63 ppm / 4%
91				0.84 ppm / 4%
98				1.23 ppm / 4%
105				0.91 ppm / 4%
112				1.13 ppm / 4%
113				1.10 ppm / 4%
115				1.04 ppm / 4%
117				0.97 ppm / 4%
119				0.86 ppm / 4%
121				0.78 ppm / 4%
123				0.64 ppm / 4%
125				0.60 ppm / 4%
127				0.50 ppm / 4%
129				0.25 ppm / 4%

methoxychlor

Experiment Comments: All milk analytical results were adjusted for 4% butterfat content and were corrected for checks. Milk samples are averages from 4 consecutive milkings.

Analytical Method: Methoxychlor was extracted and partitioned; cleanup and analysis used the Claborn and Beckman procedure.

Animal Data

Animal ID	Days Dosed	Lactation status	Description	Chemical Intake Rate	Feed Concentration	Feed Intake Rate	Weight
15	112	lactating	Holstein		7000 ppm		
16	112	lactating	Holstein		4000 ppm		

Note: Animal was sacrificed and then body fat samples were analyzed

Note: Concentration data includes (concentration in reported units / percent fat).

Gannon et al., 1959b

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17	112	lactating	Holstein	1000 ppm
18	112	lactating	Holstein	800 ppm

Media Concentrations

Day	Beef fat	Beef tissue	Milk fat	Whole milk
Animal ID 15				
3				0.60 ppm / 4%
7				0.83 ppm / 4%
14				0.85 ppm / 4%
28				1.08 ppm / 4%
42				0.65 ppm / 4%
49				0.55 ppm / 4%
56				1.56 ppm / 4%
63				1.24 ppm / 4%
70				1.85 ppm / 4%
77				1.33 ppm / 4%
84				2.01 ppm / 4%
91				2.25 ppm / 4%
98				2.35 ppm / 4%
105				0.86 ppm / 4%
112				2.14 ppm / 4%
113				0.40 ppm / 4%
115				0.11 ppm / 4%
117				0.09 ppm / 4%
119				0.07 ppm / 4%
121				0.07 ppm / 4%
123				0.06 ppm / 4%
125				0.04 ppm / 4%
127				0.05 ppm / 4%
Animal ID 16				
2				0.10 ppm / 4%
3				0.15 ppm / 4%

Note: Concentration data includes (concentration in reported units / percent fat).

Gannon et al., 1959b

Journal of Agricultural and Food Chemistry. 7: 829

Day	Beef fat	Beef tissue	Milk fat	Whole milk
7				0.43 ppm / 4%
14				0.34 ppm / 4%
28				0.36 ppm / 4%
42				0.38 ppm / 4%
49				0.44 ppm / 4%
56				0.38 ppm / 4%
63				0.32 ppm / 4%
70				0.80 ppm / 4%
77				0.87 ppm / 4%
84				0.56 ppm / 4%
91				0.43 ppm / 4%
98				0.50 ppm / 4%
105				0.29 ppm / 4%
112	4.93 ppm			0.51 ppm / 4%
Animal ID 17				
3				0.07 ppm / 4%
7				0.21 ppm / 4%
14				0.16 ppm / 4%
28				0.11 ppm / 4%
42				0.13 ppm / 4%
49				0.13 ppm / 4%
56				0.12 ppm / 4%
63				0.05 ppm / 4%
70				0.04 ppm / 4%
77				0.12 ppm / 4%
84				0.08 ppm / 4%
91				0.16 ppm / 4%
98				0.17 ppm / 4%
105				0.17 ppm / 4%
112				0.19 ppm / 4%
113				0.11 ppm / 4%
115				0.08 ppm / 4%

Note: Concentration data includes (concentration in reported units / percent fat).

Gannon et al., 1959b

Journal of Agricultural and Food Chemistry. 7: 829

Day	Beef fat	Beef tissue	Milk fat	Whole milk
117				0.03 ppm / 4%
123				0.03 ppm / 4%
125				0.02 ppm / 4%
Animal ID 18				
3				0.08 ppm / 4%
7				0.17 ppm / 4%
14				0.06 ppm / 4%
28				0.06 ppm / 4%
42				0.07 ppm / 4%
49				0.15 ppm / 4%
56				0.13 ppm / 4%
63				0.07 ppm / 4%
70				0.08 ppm / 4%
77				0.09 ppm / 4%
84				0.06 ppm / 4%
91				0.13 ppm / 4%
98				0.06 ppm / 4%
105				0.18 ppm / 4%
112				0.13 ppm / 4%
113				0.10 ppm / 4%
115				0.03 ppm / 4%
117				0.07 ppm / 4%
119				0.01 ppm / 4%
121				0.07 ppm / 4%
123				0.01 ppm / 4%
125				0.04 ppm / 4%
127				0.02 ppm / 4%

Note: Concentration data includes (concentration in reported units / percent fat).

Gaughan et al., 1978

Journal of Agricultural and Food Chemistry. 26: 613

The primary focus of this study was to compare metabolism of forms of permethrin with differing stereochemistry. Cows were fed radiolabeled trans- or cis-permethrin for 3 consecutive days at 1 mg/kg/d. Fecal, urine, and milk samples were taken during and after the dose period. The cows were sacrificed 12-13 days afterward. The study also conducted detailed analysis on the metabolites observed. All cows suffered weight loss varying from 12%-23% for the duration of the study. Though the chemical is highly metabolized, milk and fat residues are almost entirely the unmetabolized compound.

permethrin

Experiment Comments: Cows were fed different forms of permethrin. Cow1: acid-t-permethrin. Cow2: alc-t-permethrin. Cow3: acid-cis-permethrin. Cow 4: alc-cis-permethrin. All experimental results units are in 14C permethrin equivalents. Milk concentrations had to be estimated based on a chart. Beef concentrations were taken 12-13 days after dosing ended.

Analytical Method: Permethrin was administered in absolute ethanol via a tube through the mouth and into the rumen. The initial dose began after 4 days of acclimatization in the 14CO2 head chambers. Milk samples were taken every 12 h during dosing and every 24 h thereafter. Note: Cows 1, 3, and 4 suffered weight loss of 12%-16% during the study and cow 2 suffered a 23% weight loss. This cow had a marked reduction in milk production and food consumption. Milk samples were extracted with hexane and then counted by LSC. More detailed analyses were made on composite milk samples (see article). Fat samples were also extracted with hexane and then analyzed by column chromatography and TLC, as were the milk samples. Radiocarbon recovery ranged from 90%-108%.

Animal Data

Animal ID	Days Dosed	Lactation status	Description	Chemical Intake Rate	Feed Concentration	Feed Intake Rate	Weight
1	3	lactating	Jersey	1 mg/kgBW/d			352 kg
Note: Sacrificed on day 13							
2	3	lactating	Jersey	1.09 mg/kgBW/d			371 kg
Note: Sacrificed day 12							
3	3	lactating	Jersey	1 mg/kgBW/d			440 kg
Note: Sacrificed on day 13							
4	3	lactating	Jersey	0.92 mg/kgBW/d			444 kg
Note: Sacrificed on day 12							

Media Concentrations

Day	Beef fat	Beef tissue	Milk fat	Whole milk

Note: Concentration data includes (concentration in reported units / percent fat).

Gaughan et al., 1978

Journal of Agricultural and Food Chemistry. 26: 613

Day	Beef fat	Beef tissue	Milk fat	Whole milk
Animal ID 1				
3				20 ppb (estimated from Figure 4.)
Animal ID 2				
3				250 ppb (estimated from Figure 4.)
12	56 ppb (subcutaneous, after dosing ended)			
Animal ID 3				
3				75 ppb (estimated from Figure 4.)
Animal ID 4				
3				75 ppb (estimated from Figure 4.)
12	101 ppb (subcutaneous, after dosing ended)			

Note: Concentration data includes (concentration in reported units / percent fat).

Guardigli et al., 1976

Archives of Environmental Contamination and Toxicology. 4: 145

The herbicide oxadiazon was administered to dairy cows at 0, 0.5, 2.5, and 25 ppm. The chemical was also administered to quail at 0, 20, 80, and 160 ppm. Animals were dosed for 28 days. Milk concentrations were monitored throughout the experiment and continued for 12 days after dosing ended. Various tissues were sampled at 1 and 12 days past the feeding period. The majority of the chemical is eliminated intact in the urine or excreta and only negligible metabolites were detected. Concentrations in milk and tissues rapidly declined after the dosing ended. Milk samples were free of oxadiazon residues about 3 days after end of feeding study. The plateau was reached on the 8th feeding day.

oxadiazon

Experiment Comments: Note there were groups of cows at each dosage level, but the number of cows used was not reported. Thus, data appear to be an average.

Analytical Method: Milk samples were extracted with acetone. Tissue samples were extracted with acetonitrile. Analysis was by electron-capture GLC. Recovery for milk and tissue samples always exceeded 90%. A detailed description of the full extraction and cleanup procedures is provided.

Animal Data

Animal ID	Days Dosed	Lactation status	Description	Chemical Intake Rate	Feed Concentration	Feed Intake Rate	Weight
1	28	lactating	dairy		25 ppm		

Note: This is a group of cows. Concentrations are averages.

Media Concentrations

Day	Beef fat		Beef tissue		Milk fat	Whole milk	
Animal ID 1							
24						83.8 ppb	(Day estimated from Figure 5. Concentration reported in abstract.)
28	0.89 ppm	(omental)					
28	1.04 ppm	(subcutaneous)	0.03 ppm	(biceps femoris muscle)			
28	0.90 ppm	(perirenal)	0.03 ppm	(longissimus dorsi muscle)		70 ppb	(from Figure 5)

Note: Concentration data includes (concentration in reported units / percent fat).

Gutenmann and Lisk, 1970

Journal of Agricultural and Food Chemistry. 18: 128

Bromacil was fed at 5 and 30 ppm to dairy cows for 4 days and concentrations in milk reached 0.019 and 0.13 ppm respectively.

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bromacil

Experiment Comments: Concentrations were measured in the morning and evening milk samples. Since the contaminated feed was administered in the evening grain, most of the chemical was excreted during the evening milkings. The data recorded here are from the eveing milk samples only. Assumed feed intake as dry weight.

Analytical Method: Cows were fed bromacil, mixed in acetone and then applied to the evening grain. Samples were analyzed by GC using the technique of Gutenmann and Lisk (1969). This analysis had recoveries of 85%-100%.

Animal Data

Animal ID	Days Dosed	Lactation status	Description	Chemical Intake Rate	Feed Concentration	Feed Intake Rate	Weight
1	4	lactating	Holstein	113.5 mg/d	5 ppm	50 lbsDW/d	1550 lbs
2	4	lactating	Holstein	681 mg/d	30 ppm	50 lbsDW/d	1450 lbs

Media Concentrations

Day	Beef fat	Beef tissue	Milk fat	Whole milk
Animal ID 1				
2				0.019 ppm
3				0.019 ppm
4				0.018 ppm
5				0.014 ppm
Animal ID 2				
2				0.11 ppm
3				0.12 ppm
4				0.116 ppm
5				0.096 ppm

Note: Concentration data includes (concentration in reported units / percent fat).

Gyrisco et al., 1959

Journal of Agricultural and Food Chemistry. 7: 707

Article provided the results of several studies that compared administering pesticide-contaminated feed to cows. Study formulated pesticides DDT, lindane, parathion, and aldrin as dusts applied to a second-cutting stand of alfalfa. Cows were initially fed the field-applied contaminated hay at levels of < 1 ppm in feed. Chemicals were then added to untreated hay to formulate feed at known concentrations prior to feeding. Concentrations administered to animals were increased from 2 ppm to 10 ppm over time. Animals were maintained on the 10 ppm feed for 26 days. The highest milk concentrations were noted from DDT, followed by lindane, aldrin, and parathion.

aldrin

Experiment Comments: The data for the last day of feeding at the highest concentration are provided. This chemical is metablized to dieldrin. It is not clear if they measured total chorine; if so, this is actually measuring diedrin accumulation.

Analytical Method: Analytical methods are not provided in detail and mostly reference other articles.

Animal Data

Animal ID	Days Dosed	Lactation status	Description	Chemical Intake Rate	Feed Concentration	Feed Intake Rate	Weight
4	26	lactating	Holstein or Brown Swiss		10 ppm		

Media Concentrations

Day	Beef fat	Beef tissue	Milk fat	Whole milk	
Animal ID 4					
5				0.01 ppm	(at detection limit)
19				0.04 ppm	
26				0.06 ppm	
33				0.02 ppm	

DDT

Experiment Comments: The data for the last day of feeding at the highest concentration are provided.

Analytical Method: Referenced the method of Schechter (colorimetric) as modified by Downing and Norton.

Animal Data

Note: Concentration data includes (concentration in reported units / percent fat).

Gyrisco et al., 1959

Journal of Agricultural and Food Chemistry. 7: 707

Animal ID	Days Dosed	Lactation status	Description	Chemical Intake Rate	Feed Concentration	Feed Intake Rate	Weight
11	26	lactating	Holstein or Brown Swiss		10 ppm		
13	26	lactating	Holstein or Brown Swiss		10 ppm		
6	63	lactating	Holstein or Brown Swiss		70 ppm		
9	63	lactating	Holstein or Brown Swiss		70 ppm		

Media Concentrations

Day	Beef fat	Beef tissue	Milk fat	Whole milk	
Animal ID 11					
1				0.13 ppm	(barn-treated hay)
5				0.18 ppm	(barn-treated hay)
12				0.14 ppm	(barn-treated hay)
19				0.18 ppm	(barn-treated hay)
26				0.20 ppm	(barn-treated hay)
Animal ID 13					
1				0.08 ppm	(barn-treated hay)
5				0.06 ppm	(barn-treated hay)
12				0.18 ppm	(barn-treated hay)
19				0.23 ppm	(barn-treated hay)
26				0.14 ppm	(barn-treated hay)
33				0.05 ppm	(barn-treated hay)
Animal ID 6					
7				0.01 ppm	(field-treated hay)
11				0.23 ppm	(field-treated hay)
16				0.36 ppm	(field-treated hay)
22				0.66 ppm	(field-treated hay)
29				0.77 ppm	(field-treated hay)
35				0.61 ppm	(field-treated hay)
39				0.93 ppm	(field-treated hay)
43				0.86 ppm	(field-treated hay)
50				0.88 ppm	(field-treated hay)

Note: Concentration data includes (concentration in reported units / percent fat).

Gyrisco et al., 1959

Journal of Agricultural and Food Chemistry. 7: 707

Day	Beef fat	Beef tissue	Milk fat	Whole milk	
57				0.84 ppm	(field-treated hay)
64				0.75 ppm	(field-treated hay)
Animal ID 9					
11				0.64 ppm	(barn-treated hay)
16				0.56 ppm	(barn-treated hay)
22				1.3 ppm	(barn-treated hay)
29				3.1 ppm	(barn-treated hay)
36				2.9 ppm	(barn-treated hay)
39				3.4 ppm	(barn-treated hay)
43				2.9 ppm	(barn-treated hay)
50				1.4 ppm	(barn-treated hay)
57				4.6 ppm	(barn-treated hay)
64				2.00 ppm	(barn-treated hay)

lindane

Experiment Comments: The data for the last day of feeding at the highest concentration are provided.

Analytical Method: Analytical methods are not provided in detail and mostly reference other articles. Used a colorimetric method.

Animal Data

Animal ID	Days Dosed	Lactation status	Description	Chemical Intake Rate	Feed Concentration	Feed Intake Rate	Weight
2	26	lactating	Holstein or Brown Swiss		10 ppm		
10	26	lactating	Holstein or Brown Swiss		10 ppm		

Media Concentrations

Day	Beef fat	Beef tissue	Milk fat	Whole milk	
Animal ID 2					
1				0.17 ppm	(barn-treated hay)
5				0.04 ppm	(barn-treated hay)
12				0.06 ppm	(barn-treated hay)
19				0.04 ppm	(barn-treated hay)

Note: Concentration data includes (concentration in reported units / percent fat).

Gyrisco et al., 1959

Journal of Agricultural and Food Chemistry. 7: 707

Day	Beef fat	Beef tissue	Milk fat	Whole milk	
26				0.14 ppm	(barn-treated hay)
33				0.02 ppm	(barn-treated hay)
Animal ID 10					
1				0.12 ppm	(barn-treated hay)
5				0.04 ppm	(barn-treated hay)
12				0.04 ppm	(barn-treated hay)
19				0.04 ppm	(barn-treated hay)
26				0.05 ppm	(barn-treated hay)
33				0.02 ppm	(barn-treated hay)

parathion

Experiment Comments: The data for the last day of feeding at the highest concentration are provided.

Analytical Method: Analytical methods are not provided in detail and mostly reference other articles.

Animal Data

Animal ID	Days Dosed	Lactation status	Description	Chemical Intake Rate	Feed Concentration	Feed Intake Rate	Weight
2	26	lactating	Holstein or Brown Swiss		10 ppm		
10	26	lactating	Holstein or Brown Swiss		10 ppm		

Media Concentrations

Day	Beef fat	Beef tissue	Milk fat	Whole milk	
Animal ID 2					
1				0.01 ppm	(barn-treated hay)
19				0.01 ppm	(barn-treated hay)
26				0.02 ppm	(barn-treated hay)
Animal ID 10					
5				0.02 ppm	(barn-treated hay)
12				0.03 ppm	(barn-treated hay)
19				0.02 ppm	(barn-treated hay)
26				0.02 ppm	(barn-treated hay)

Note: Concentration data includes (concentration in reported units / percent fat).

Gyrisco et al., 1959

Journal of Agricultural and Food Chemistry. 7: 707

Day	Beef fat	Beef tissue	Milk fat	Whole milk
33				0.02 ppm (barn-treated hay)

Note: Concentration data includes (concentration in reported units / percent fat).

Hardee et al., 1964

Journal of Economic Entomology. 57: 404

Residues of heptachlor epoxide and telodrin in milk from cows fed at ppb insecticide levels.

heptachlor epoxide

Experiment Comments: Feed intake assumed dry weight. Contaminated controls, media concentrations not corrected

Analytical Method: Dosages of insecticide in ethyl alcohol were added to grain, immediately prior to feeding. Analysis was by GC with radium-226 detector. Recoveries of heptachlor epoxide averaged 88%.

Animal Data

Animal ID	Days Dosed	Lactation status	Description	Chemical Intake Rate	Feed Concentration	Feed Intake Rate	Weight
19	28	lactating	Jersey		5 ppb	50 lbsDW/d	
21	28	lactating	Jersey		20 ppb	50 lbsDW/d	

Media Concentrations

Day	Beef fat	Beef tissue	Milk fat	Whole milk
Animal ID 19				
1				0.9 ppb
2				1.7 ppb
4				3.7 ppb
6				2.2 ppb
8				1.9 ppb
11				2.6 ppb
14				2.9 ppb
18				3.1 ppb
21				2.8 ppb
25				2.9 ppb
28				2.7 ppb
32				2.7 ppb
35				2.1 ppb
39				2.2 ppb

Note: Concentration data includes (concentration in reported units / percent fat).

Hardee et al., 1964

Journal of Economic Entomology. 57: 404

Day	Beef fat	Beef tissue	Milk fat	Whole milk
69				1.7 ppb
99				1.6 ppb
Animal ID 21				
1				0.4 ppb
2				1 ppb
4				1.7 ppb
6				1.9 ppb
8				3.2 ppb
11				3.7 ppb
14				3.6 ppb
18				4.1 ppb
21				4.1 ppb
25				4.4 ppb
28				4.3 ppb
32				2.6 ppb
35				2.7 ppb
39				1.8 ppb
69				1.4 ppb
99				1.3 ppb

isobenzan (telodrin)

Experiment Comments: Feed intake assumed dry weight. Telodrin also known as isobenzan. Contaminated controls, media concentrations not corrected.

Analytical Method: Dosages of insecticide in ethyl alcohol were added to grain, immediately prior to feeding. Analysis was by GC with radium-226 detector. Recovery of Telodrin averaged 74%.

Animal Data

Animal ID	Days Dosed	Lactation status	Description	Chemical Intake Rate	Feed Concentration	Feed Intake Rate	Weight
22	28	lactating	jersey		5 ppb	50 lbsDW/d	
20	28	lactating	jersey		20 ppb	50 lbsDW/d	

Note: Concentration data includes (concentration in reported units / percent fat).

Hardee et al., 1964

Journal of Economic Entomology. 57: 404

Media Concentrations

Day	Beef fat	Beef tissue	Milk fat	Whole milk
Animal ID 22				
1				0.4 ppb
2				0.4 ppb
4				0.6 ppb
6				0.6 ppb
8				1.5 ppb
11				1 ppb
14				2.1 ppb
18				1.5 ppb
21				2 ppb
25				1.9 ppb
28				1.9 ppb
32				1.1 ppb
35				0.7 ppb
39				0.8 ppb
69				0.7 ppb
99				0.5 ppb
Animal ID 20				
1				0.4 ppb
2				1.9 ppb
4				3.3 ppb
6				4.1 ppb
8				3.9 ppb
11				3.9 ppb
14				7 ppb
18				7.7 ppb
21				4.4 ppb
28				5.7 ppb
32				3.8 ppb
35				3 ppb

Note: Concentration data includes (concentration in reported units / percent fat).

Hardee et al., 1964

Journal of Economic Entomology. 57: 404

Day	Beef fat	Beef tissue	Milk fat	Whole milk
39				2.2 ppb
69				1.8 ppb
99				1.5 ppb

Note: Concentration data includes (concentration in reported units / percent fat).

Harris et al., 1956 Aug

Agricultural and Food Chemistry. 4: 694

Lactating dairy cows were fed either heptachlor or dieldrin in their feed for 112 days. The dosing level was either 1 oz of dieldrin or heptachlor per acre or 4 oz. dieldrin or heptachlor per acre. Milk samples were taken weekly. At the end of the dosing period, several animals were sacrificed to take liver, muscle, kidney, and fat samples. For 2 cows on each treatment, at dosing termination butter was churned from composite cream samples to measure residue in butter. No detectable effects were observed on the milk production, feed consumption, or general health of the cows throughout the experiment. Dieldrin appeared to reach steady state after 60 days of feeding.

dieldrin

Experiment Comments: Chemical intake rate calculated instead of the feed concentrations reported because both grain and hay were fed to cows, but only hay was contaminated. Feed intake is assumed dry weight. Dieldrin in milk reached steady state after about 60 days.

Analytical Method: Fields of first crop alfalfa were divided into plots for the 3 treatments: 1) no treatment; 2) 1 oz dieldrin/acre; 3) 4 oz dieldrin/acre. Residues were determined by spectrophotometry. Samples were purified by adsorption chromatography.

Animal Data

Animal ID	Days Dosed	Lactation status	Description	Chemical Intake Rate	Feed Concentration	Feed Intake Rate	Weight
E240	112	lactating	Holstein	22 mg/d		37.05 lbsDW/d	
Note: Butterfat produced = 1lb/d.							
W258	112	lactating	Holstein	21.9 mg/d		36.63 lbsDW/d	
Note: Butterfat produced = 1.07 lb/d.							
W257	112	lactating	Holstein	39.3 mg/d		33.63 lbsDW/d	
Note: Butterfat produced = 1.01 lb/d.							
Hu251	112	lactating	Holstein	40.5 mg/d		30.97 lbsDW/d	
Note: Butterfat produced = 0.97 lb/d.							

Media Concentrations

Day	Beef fat	Beef tissue	Milk fat	Whole milk
Animal ID E240				
9				0.1 ppm
16				0.1 ppm
23				0.2 ppm
33				0.4 ppm
37				0.3 ppm
44				0.3 ppm

Note: Concentration data includes (concentration in reported units / percent fat).

Harris et al., 1956 Aug

Agricultural and Food Chemistry. 4: 694

Day	Beef fat	Beef tissue	Milk fat	Whole milk
51				0.3 ppm
59				0.4 ppm
66				0.4 ppm
73				0.4 ppm
80				0.5 ppm
87				0.4 ppm
93				0.5 ppm
102				0.4 ppm
106				0.5 ppm
112			9.5 ppm (Average of E240 and W258.)	0.4 ppm
Animal ID W258				
9				0.2 ppm
16				0.1 ppm
23				0.2 ppm
33				0.5 ppm
37				0.3 ppm
44				0.4 ppm
51				0.4 ppm
59				0.4 ppm
66				0.6 ppm
73				0.5 ppm
80				0.5 ppm
87				0.4 ppm
93				0.4 ppm
102				0.4 ppm
106				0.5 ppm
112				0.3 ppm
Animal ID W257				
5				0.5 ppm
9				0.5 ppm
11				0.5 ppm

Note: Concentration data includes (concentration in reported units / percent fat).

Harris et al., 1956 Aug

Agricultural and Food Chemistry. 4: 694

Day	Beef fat	Beef tissue	Milk fat	Whole milk
16				0.3 ppm
23				1.2 ppm
33				1.3 ppm
37				1.1 ppm
44				1.3 ppm
51				1.5 ppm
59				1.6 ppm
66				2 ppm
73				1.6 ppm
80				1.3 ppm
87				1.8 ppm
93				1.8 ppm
102				1.8 ppm
106				1.8 ppm
112			39.3 ppm (Average of W257 and Hu251)	1.4 ppm
Animal ID Hu251				
5				0.5 ppm
9				0.5 ppm
11				0.4 ppm
16				0.3 ppm
23				1.2 ppm
33				1.3 ppm
37				1.2 ppm
44				1.5 ppm
51				1.4 ppm
59				1 ppm
66				2.2 ppm
73				1.9 ppm
80				1.5 ppm
87				1.7 ppm
93				1.8 ppm
102				1.7 ppm

Note: Concentration data includes (concentration in reported units / percent fat).

Harris et al., 1956 Aug

Agricultural and Food Chemistry. 4: 694

Day	Beef fat	Beef tissue	Milk fat	Whole milk
106				1.8 ppm
112	2.9 ppm			1.3 ppm

heptachlor epoxide

Experiment Comments: The residues measured are heptachlor epoxide, not heptachlor. At the 1 oz/acre dose of heptachlor, no residues were detected. Chemical intake rate calculated instead of the feed concentrations reported because both grain and hay were fed to cows, but only hay was contaminated. Feed intake is assumed dry weight.

Analytical Method: Fields of first crop alfalfa were divided into plots for the 3 treatments: 1) no treatment; 2) 1 oz heptachlor/acre; 3) 4 oz heptachlor/acre.Residues were determined by spectrophotometry. Samples were purified by adsorption chromatography.

Animal Data

Animal ID	Days Dosed	Lactation status	Description	Chemical Intake Rate	Feed Concentration	Feed Intake Rate	Weight
Hu228	112	lactating	Holstein	3.64 mg/d		37.44 lbsDW/d	
Note: Butterfat produced=0.71 lb/d. Feed conc on hay = 0.25 ppm.							
W256	112	lactating	Holstein	2.58 mg/d		38.94 lbsDW/d	
Note: Butterfat produced = 1.08 lb/d.							

Media Concentrations

Day	Beef fat	Beef tissue	Milk fat	Whole milk
Animal ID Hu228				
5				0.2 ppm
9				0.1 ppm
11				0.04 ppm
16				0.1 ppm
23				0.1 ppm
37				0.1 ppm
44				0.1 ppm
51				0.2 ppm
59				0.2 ppm
66				0.1 ppm
73				0.2 ppm

Note: Concentration data includes (concentration in reported units / percent fat).

Harris et al., 1956 Aug

Agricultural and Food Chemistry. 4: 694

Day	Beef fat	Beef tissue	Milk fat	Whole milk
80				0.1 ppm
87				0.3 ppm
93				0.2 ppm
102				0.3 ppm
106				0.1 ppm
112				0.1 ppm
Animal ID W256				
5				0.1 ppm
9				0.1 ppm
11				0.06 ppm
16				0.1 ppm
23				0.1 ppm
37				0.09 ppm
44				0.2 ppm
51				0.2 ppm
59				0.1 ppm
66				0.1 ppm
73				0.2 ppm
80				0.2 ppm
87				0.4 ppm
93				0.06 ppm
112	0.12 ppm		0.2 ppm (average of Hu228 and W256 measured in butter.)	0.1 ppm

Note: Concentration data includes (concentration in reported units / percent fat).

Ivey et al., 1961

Journal of Agricultural and Food Chemistry. 9: 374

Aldrin administered to steers, sheep, and hogs for 12 weeks at varying concentrations. Cattle were given feed at 0.25, 0.75, 2, and 10 ppm. Three animals were fed at each level. Two animals were slaughtered at the end of the feeding period and one animal was slaughtered 6 weeks after the feeding period ceased. The experiment confirmed that aldrin is metabolized to dieldrin; only dieldrin was detected in the fat of animals. The only exception was at the 10 ppm level, in which 0.08 ppm of aldrin was present in body fat. The researchers also showed that concentrations in fat were not reduced upon cooking of meat.

dieldrin

Experiment Comments: Chemical was originally fed as aldrin, which is readily metabolized to diedrin. There was no evidence of illness in animals except occasional diarrhea.

Analytical Method: Technical aldrin (91%) was prepared in acetone solutions and added to feed. For fat sample, analysis used combustion method of saponification and extraction with n-hexane. A colorimetric method was used for quantification and total chlorine measurements were used to confirm results. Recovery of dieldrin in fat was 90%.

Animal Data

Animal ID	Days Dosed	Lactation status	Description	Chemical Intake Rate	Feed Concentration	Feed Intake Rate	Weight
1	84	non-lactating	steer		0.25 ppm		
Note: average of 2 animals							
2	84	non-lactating	steer		0.75 ppm		
Note: average of 2 animals							
3	84	non-lactating	steer		2 ppm		
Note: average of 2 animals							
4	84	non-lactating	steer		10 ppm		
Note: 1 animal only							

Media Concentrations

Day	Beef fat	Beef tissue	Milk fat	Whole milk
Animal ID 1				
84	0.99 ppm (bodyfat)			
126	0.68 ppm (body fat)			
Animal ID 2				
84	3.40 ppm (bodyfat)	0.07 ppm		
126	2.1 ppm (body fat)			

Note: Concentration data includes (concentration in reported units / percent fat).

Ivey et al., 1961

Journal of Agricultural and Food Chemistry. 9: 374

Day	Beef fat	Beef tissue	Milk fat	Whole milk
Animal ID 3				
84	8.5 ppm (bodyfat)	0.13 ppm		
126	5.1 ppm (body fat)	0.12 ppm		
Animal ID 4				
84	39.20 ppm (bodyfat)	0.72 ppm		
126	17.8 ppm (body fat)	0.17 ppm		

Note: Concentration data includes (concentration in reported units / percent fat).

Jensen and Hummel, 1982

Bulletin of Environmental Contamination and Toxicology. 29: 440

The study measured concentrations of TCDD in milk and cream from cows given contaminated feed. The feed was spiked with 2,4,5-T containing 5 ppt of TCDD. The 2,4,5-T was prepared in concentrations of 10, 30, 100, 300, or 1000 ppm resulting in corresponding TCDD concentations of 5, 15, 50, 150, and 500 ppt. Cows were first fed 5 ppt TCDD feed and concentrations were increased every 14 days at each level. The only exception was at 500 ppt, which was fed to cows for 21 days. The authors reported a half life for TCDD of 41 days in milk once the contaminated feed was removed.

2,3,7,8-TCDD

Experiment Comments: Feed intake rates were assumed to be in dry weight.

Analytical Method: Concentrate was prepared by mixing an acetone solution of 2,4,5-T with silica gel. A GC-MS was used for the analysis. The recovery was 75% from milk. Since the concentrations were so low, results vary by 20% of the reported value at 10 ppt and above for milk.

Animal Data

Animal ID	Days Dosed	Lactation status	Description	Chemical Intake Rate	Feed Concentration	Feed Intake Rate	Weight
36	16	lactating	Holstein Dairy		500 ppt	36 lbsDW/d	1119 lbs
7417	21	lactating	Holstein Dairy		500 ppt	36 lbsDW/d	1119 lbs
30	21	lactating	Holstein Dairy		500 ppt	36 lbsDW/d	1119 lbs

Media Concentrations

Day	Beef fat	Beef tissue	Milk fat	Whole milk	
Animal ID 36					
3				42 ppt	
16				89 ppt	
24				86 ppt	
28				59 ppt	
38				43 ppt	
52				35 ppt	
61				32 ppt	
69				29 ppt	
81				14 ppt	(Two-sample mean)
83				14 ppt	

Note: Concentration data includes (concentration in reported units / percent fat).

Jensen and Hummel, 1982

Bulletin of Environmental Contamination and Toxicology. 29: 440

Day	Beef fat	Beef tissue	Milk fat	Whole milk	
89				15 ppt	
96				18 ppt	
101				14 ppt	
111				14 ppt	
Animal ID 7417					
3				42 ppt	
16				69 ppt	
21				68 ppt	
28				38 ppt	
38				31 ppt	
52				25 ppt	
61				26 ppt	
69				22 ppt	
81				19.5 ppt	(Two-sample mean)
83				22 ppt	
89				21 ppt	
96				21 ppt	
101				20 ppt	
111				19 ppt	
Animal ID 30					
16				47 ppt	
21				79 ppt	

Note: Concentration data includes (concentration in reported units / percent fat).

Jensen et al., 1981

Journal of Agricultural and Food Chemistry. 29: 265

Seven beef cattle were fed rations containing 24 ppt of 2,3,7,8-TCDD for 28 days. An additional 5 animals functioned as controls. Three of the treated calves and three controls were sacrificed within 24 hours after feeding ceased and samples of muscle, fat, liver, and kidney were taken. Fat samples (omental or tail head fat) were taken by biopsy from the remaining cattle (4 treated, 2 controls) at various intervals. Remaining animals were sacrificed 50 weeks after TCDD was discontinued in the diet and samples of muscle, fat, liver, and kidney were taken. The article uses a kinetic model to estimate a maximum concentration at steady state of 594 +/- 62 ppt.

2,3,7,8-TCDD

Experiment Comments: The dissipation of TCDD residue was monitored only in fat samples because levels were too low in other tissues taken at the end of the feeding period. Average recovery of TCDD was 71% from fat, 73% from liver, 79% from kidney, and 74% from muscle. Average fat content of muscle samples was determined to 2%.

Analytical Method: Muscle, liver, and fat samples were digested, extracted with hexane, washed, and further cleaned up (details provided in article). Initial poor recovery was improved through further cleanup. GC-MS was used for TCDD quantification. Fat content of muscle sample was determined by AOAC method 24.0005.

Animal Data

Animal ID	Days Dosed	Lactation status	Description	Chemical Intake Rate	Feed Concentration	Feed Intake Rate	Weight
193	28	non-lactating	young beef cows	0.00061 ug/kgBW/d	24 ppt	5.0 kgDW/d	190 kg
194	28	non-lactating	young beef cows	0.00073 ug/kgBW/d	24 ppt	6.2 kgDW/d	190 kg
195	28	non-lactating	young beef cows	0.0007 ug/kgBW/d	24 ppt	6.3 kgDW/d	200 kg
198	28	non-lactating	young beef cows	0.00083 ug/kgBW/d	24 ppt	6.41 kgDW/d	175 kg
199	28	non-lactating	young beef cows	0.00078 ug/kgBW/d	24 ppt	6.3 kgDW/d	183 kg
200	28	non-lactating	young beef cows	0.00082 ug/kgBW/d	24 ppt	7.19 kgDW/d	203 kg
203	28	non-lactating	young beef cows	0.00083 ug/kgBW/d	24 ppt	6.5 kgDW/d	173 kg

Media Concentrations

Day	Beef fat	Beef tissue	Milk fat	Whole milk
Animal ID 193				
28	66 ppt / 2%	2 ppt / 2% (muscle)		
Animal ID 194				
28	91 ppt / 2%	2 ppt / 2% (muscle)		

Note: Concentration data includes (concentration in reported units / percent fat).

Jensen et al., 1981

Journal of Agricultural and Food Chemistry. 29: 265

Day	Beef fat	Beef tissue	Milk fat	Whole milk
Animal ID 195				
28	95 ppt / 2%	2 ppt / 2% (muscle)		
Animal ID 198				
28	81.5 ppt / 2% (2-sample mean)			
42	91 ppt / 2% (omental)			
56	100 ppt / 2% (omental)			
84	85 ppt / 2% (omental)			
112	46 ppt / 2% (Tail head sample.)			
140	61 ppt / 2% (omental)			
168	37 ppt / 2% (Tail head sample.)			
196	60 ppt / 2% (omental)			
280	16 ppt / 2% ((average of 2 values used --15,17). Omental fat.)			
378	14 ppt / 2% (omental)			
Animal ID 199				
28	80 ppt / 2%			
42	66 ppt / 2% (omental)			
56	92 ppt / 2% (omental)			
84	52 ppt / 2% (omental)			
112	69 ppt / 2% (Tail head sample.)			
140	54 ppt / 2% (omental)			
168	42.5 ppt / 2% ((average of 2 values used --31, 54). Tail head sample.)			
196	48 ppt / 2% (omental)			
280	26 ppt / 2% (Omental fat.)			
378	17 ppt / 2% (omental)			
Animal ID 200				
28	86 ppt / 2%			
42	68 ppt / 2% (omental)			

Note: Concentration data includes (concentration in reported units / percent fat).

Jensen et al., 1981

Journal of Agricultural and Food Chemistry. 29: 265

Day	Beef fat	Beef tissue	Milk fat	Whole milk
56	71 ppt / 2% (omental)			
84	108 ppt / 2% (omental)			
112	71.7 ppt / 2% ((average of 3 values used --63, 57, 95). Tail head sample.)			
140	51 ppt / 2% (omental)			
168	37 ppt / 2% (Tail head.)			
196	25 ppt / 2% (omental)			
280	23 ppt / 2% (omental)			
Animal ID 203				
28	77 ppt / 2%			
42	80 ppt / 2% (omental)			
56	97 ppt / 2% (omental)			
84	85 ppt / 2% (omental)			
112	34 ppt / 2% ((average of 2 values used --31, 37). Tail head sample.)			
140	25.5 ppt / 2% (omental)			
168	22.5 ppt / 2% (Two-sample mean. Tail head.)			
196	29 ppt / 2% (omental)			
280	15 ppt / 2% (omental)			

Note: Concentration data includes (concentration in reported units / percent fat).

Johnson and Bowman, 1972

Journal of Dairy Science. 55: 777

Cows were fed diets of either fenthion or fenitrothion at levels of 0, 25, 50, or 100 ppm in feed for 28 days. Concentrations of the chemicals and their metabolites were monitored in milk, urine, and feces throughout the experiment. Concentrations of fenthion and its metabolites were detected in milk. Concentrations of fenitrothion were not detected in milk. Seven days after the feeding ended, milk, urine, and feces were free of residues.

fenthion

Experiment Comments: The dry weight feed intake rates were calculated using total intakes of 23.9, 18.6, and 17.5 kg per day for each intake rate (i.e., 25, 50, and 100 ppm) and multiplying by the average dry matter content for the corn silage, given as 32%. Concentrations are also available for the chemical's metabolites in milk.

Analytical Method: The details of the analytical method are not provided, but are referenced to other articles.

Animal Data

Animal ID	Days Dosed	Lactation status	Description	Chemical Intake Rate	Feed Concentration	Feed Intake Rate	Weight
1	28	lactating	Jersey, 200 days in lactation	0.43 mg/kgBW/d	25 ppm	7.6 kgDW/d	
Note: Average of two cows.							
2	28	lactating	Jersey, 200 days in lactation	0.70 mg/kgBW/d	50 ppm	6.0 kgDW/d	
Note: Average of two cows.							
3	28	lactating	Jersey, 200 days in lactation	1.29 mg/kgBW/d	100 ppm	5.6 kgDW/d	
Note: Average of two cows.							

Media Concentrations

Day	Beef fat	Beef tissue	Milk fat	Whole milk	
Animal ID 1					
7				0.002 mg/kg	
14				0.002 mg/kg	
21				0.002 mg/kg	
28				0.003 mg/kg	(average of two cows)
Animal ID 2					
7				0.003 mg/kg	
14				0.004 mg/kg	
21				0.004 mg/kg	

Note: Concentration data includes (concentration in reported units / percent fat).

Johnson and Bowman, 1972

Journal of Dairy Science. 55: 777

Day	Beef fat	Beef tissue	Milk fat	Whole milk	
28				0.006 mg/kg	(average of two cows)
Animal ID 3					
7				0.006 mg/kg	
14				0.004 mg/kg	
21				0.007 mg/kg	
28				0.010 mg/kg	(average of two cows)

Note: Concentration data includes (concentration in reported units / percent fat).

Kiigemagi et al., 1961

Journal of Agricultural and Food Chemistry. 6: 518

Endrin content of milk and body tissues of dairy cows receiving endrin daily in their diet. A bioassay was used to detect toxic metabolites but none were noted.

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endrin

Experiment Comments: Endrin administered to entire feed only once, not once per day, based on assumption that if entire feed was consumed, correct ppm would be present. Average milkfat was 5.3%.

Analytical Method: Endrin in acetone solution. Used spectrophotometric method for endrin analysis. Bodyfat was obtained from various areas of deposition over the outside of the carcass. Samples were also analyzed using a bioassay method. Recoveries were approximately 80%.

Animal Data

Animal ID	Days Dosed	Lactation status	Description	Chemical Intake Rate	Feed Concentration	Feed Intake Rate	Weight
2	84	lactating			0.25 ppm		
Note: average of 4 animals							
3	84	lactating			0.75 ppm		
Note: average of 3 animals							
4	84	lactating			2 ppm		
Note: average of 2 animals							

Media Concentrations

Day	Beef fat	Beef tissue	Milk fat	Whole milk
Animal ID 2				
7				0.01 ppm / 5.3%
28				0.01 ppm / 5.3%
56				0.02 ppm / 5.3%
84	0.1 ppm (bodyfat)			0.02 ppm / 5.3%
Animal ID 3				
7				0.01 ppm / 5.3%
14				0.01 ppm / 5.3%
28				0.02 ppm / 5.3%
56				0.04 ppm / 5.3%

Note: Concentration data includes (concentration in reported units / percent fat).

Kiigemagi et al., 1961

Journal of Agricultural and Food Chemistry. 6: 518

Day	Beef fat		Beef tissue	Milk fat	Whole milk	
84	0.4 ppm	(bodyfat)			0.02 ppm / 5.3%	
Animal ID 4						
3					0.01 ppm / 5.3%	
7					0.07 ppm / 5.3%	
14					0.08 ppm / 5.3%	
28					0.1 ppm / 5.3%	
56					0.1 ppm / 5.3%	
84	1.0 ppm	(bodyfat)			0.08 ppm / 5.3%	
126					0.03 ppm / 5.3%	(one cow)

Note: Concentration data includes (concentration in reported units / percent fat).

Kutschinski and Riley, 1969

Journal of Agricultural and Food Chemistry. 17: 283

Steers were fed picloram for 2-10 weeks at concentrations ranging from 200-1600 ppm. Blood samples were taken regularly. Animals were slaughtered at various times during the experiment. The compound reached a maximum concentration in blood within 3 days of treatment. Residues in tissues were proportional to concentrations fed to animals, but decreased rapidly after withdrawal.

picloram

Experiment Comments: Cows were fed increasing concentrations in two week increments, with two cows being slaughtered at the end of each dose period and the rest moving up to a higher dose level. Data reported are from the last dosage prior to slaughter. Residues at nondetectable levels were not recorded.

Analytical Method: Cows were fed picloram in a purified aqueous solution of the salt. The compound was mixed into the grain. After initial 2 weeks at 200 ppm, 2 cows were sacrificed and the rest increased dose to 400 ppm. After another 2 weeks, 2 more cows were sacrificed and dose increased to 800 ppm, etc. up to 1600 ppm. Samples were analyzed by gas chromatography. Recoveries were about 97% for muscle tissues.

Animal Data

Animal ID	Days Dosed	Lactation status	Description	Chemical Intake Rate	Feed Concentration	Feed Intake Rate	Weight
1753	14	non-lactating	Hereford-Holstein	3.2 mg/kgBW/d	200 ppm		500 lbs
1758	14	non-lactating	Hereford-Holstein	2.6 mg/kgBW/d	200 ppm		500 lbs
1755	14	non-lactating	Hereford-Holstein	6.9 mg/kgBW/d	400 ppm		500 lbs
1757	14	non-lactating	Hereford-Holstein	5.8 mg/kgBW/d	400 ppm		500 lbs
1754	14	non-lactating	Hereford-Holstein	13.4 mg/kgBW/d	800 ppm		500 lbs
1756	14	non-lactating	Hereford-Holstein	13.1 mg/kgBW/d	800 ppm		500 lbs
1759	14	non-lactating	Hereford-Holstein	22.5 mg/kgBW/d	1600 ppm		500 lbs
1760	14	non-lactating	Hereford-Holstein	22.8 mg/kgBW/d	1600 ppm		500 lbs

Media Concentrations

Day	Beef fat	Beef tissue	Milk fat	Whole milk
Animal ID 1753				
14	0.06 ppm (abdominal fat)			
Animal ID 1758				
14	0.06 ppm (abdominal fat)			

Note: Concentration data includes (concentration in reported units / percent fat).

Kutschinski and Riley, 1969

Journal of Agricultural and Food Chemistry. 17: 283

Day	Beef fat		Beef tissue	Milk fat	Whole milk
Animal ID 1755					
14			0.07 ppm		
Animal ID 1757					
14			0.05 ppm		
Animal ID 1754					
14			0.20 ppm		
Animal ID 1756					
14			0.32 ppm		
Animal ID 1759					
14	0.28 ppm	(abdominal fat)			
14	0.35 ppm	(subcutaneous fat)	0.30 ppm		
Animal ID 1760					
14	0.29 ppm	(subcutaneous fat)			
14	0.23 ppm	(abdominal fat)	0.29 ppm		

Note: Concentration data includes (concentration in reported units / percent fat).

Laben et al., 1966 Jun 15

Journal of Dairy Science. 49: 1488

Low levels of DDT were fed to lactating cattle for 26 weeks at levels of 0.09, 0.24, 0.39, and 0.73 via crystalline solution added to feed, and 0.28 ppm via field-contaminated hay. Maximum milk fat residues were reached between weeks 18 and 21, and fell afterwards, though dosing continued. DDT residues were measured as a total including DDT isomers, DDE isomers and TDE isomers. Feeding DDT to these groups was either through field-contaminated alfalfa hay or addition of a crystalline DDT solution to the grain ration. No significant differences were observed between these two contamination approaches. The researchers' analysis found that there was a greater relative amount of DDT accounted for in milk fat at lower levels of feed concentrations than at higher feed concentrations. Also, while DDT concentrations in the feed were steadily rising until the 24th week of the study, milk fat concentrations had already leveled off or begun declining several weeks earlier.

DDT

Experiment Comments: The DDT concentration in the hay continued to rise throughout the duration of the experiment, but the intake on a per kg body weight basis remained constant due to the increase in body weight of the animals as lactation progressed. Prior to formal start of the experiment, all animals were receiving low levels of DDT in their hay, <0.05 ppm.

Analytical Method: Group 1, though fed a low level of DDT, was viewed as a control group. Groups 2-4 were fed DDT administered via a crystalline solution added to feed. Group 5 was fed field-contaminated hay. Milk fat and body fat samples were taken at regular intervals and mesaured by electron-capture gas chromatography. Total DDT was measured (DDT, DDE, and TDE).

Animal Data

Animal ID	Days Dosed	Lactation status	Description	Chemical Intake Rate	Feed Concentration	Feed Intake Rate	Weight
Group2	182	lactating	high-producing Holstein heifer	5.1 mg/d	0.24 ppm		1095 kg
Note: average of 3 cows.							
Group3	182	lactating	high-producing Holstein heifer	8.4 mg/d	0.39 ppm		1061 kg
Note: average of 4 cows.							
Group4	182	lactating	high-producing Holsetin heifer	15.2 mg/d	0.73 ppm		1023 kg
Note: average of 3 cows.							
Group5	182	lactating	high-producing Holstein heifers	5.6 mg/d	0.28 ppm		1071 kg
Note: average of 4 cows. Fed field-contaminated hay.							

Media Concentrations

Day	Beef fat	Beef tissue	Milk fat	Whole milk
Animal ID Group2				
1	0.11 ppm		0.08 ppm	
28	0.01 ppm		0.13 ppm	

Note: Concentration data includes (concentration in reported units / percent fat).

Laben et al., 1966 Jun 15

Journal of Dairy Science. 49: 1488

Day	Beef fat	Beef tissue	Milk fat	Whole milk
56	0.16 ppm		0.33 ppm	
84	0.13 ppm		0.38 ppm	
154	0.38 ppm		0.42 ppm	
Animal ID Group3				
1	0.1 ppm		0.1 ppm	
28	0.04 ppm		0.14 ppm	
56	0.1 ppm		0.28 ppm	
84	0.15 ppm		0.59 ppm	
126	0.71 ppm		0.5 ppm	
Animal ID Group4				
1	0.10 ppm		0.07 ppm	
28	0.13 ppm		0.1 ppm	
56	0.1 ppm		0.31 ppm	
84	0.37 ppm		0.85 ppm	
126	1.25 ppm		0.91 ppm	
Animal ID Group5				
1	0.1 ppm		0.09 ppm	
28	0.05 ppm		0.1 ppm	
56	0.52 ppm		0.26 ppm	
84	0.29 ppm		0.53 ppm	
126	0.83 ppm		0.36 ppm	

Note: Concentration data includes (concentration in reported units / percent fat).

Martin et al., 1976

Journal of Animal Science. 42: 196

DDT, DDD, and DDE were monitored in the fat of eight steers fed feed contaminated with DDT and DDE for 216 days. After the feeding period ended, adipose tissue samples were taken every 14 days for 56 further days to monitor elimination. The study objectives were to monitor the depletion of DDT and its metabolites in steers on uncontaminated finishing diets after they had been exposed to contaminated feed. The investigators added 0.9 kg activated charcoal , 0.5% choline chloride, or both to the feed to see if these additives affected dissipation rates. Of the metabolites, DDE was more persistent, whereas DDD was readily metabolized.

DDT

Experiment Comments: Samples are from perianal adipose fat tissue. Steers were fed for 216 days with a diet consisting of 25% gin trash contaminated with DDT and DDE plus other nutrients. Feed intake rates were not well defined.

Analytical Method: Adipose fat tissue samples were taken from the perianal area of the steer every 14 days and were analyzed by electron-capture gas-liquid chromatography.

Animal Data

Animal ID	Days Dosed	Lactation status	Description	Chemical Intake Rate	Feed Concentration	Feed Intake Rate	Weight
215	216	non-lactating	steer		8.84 ppm		200 kg
Note: Given basal diet 1.							
176	216	non-lactating	steer		8.84 ppm		200 kg
Note: Given basal diet 1.							
182	216	non-lactating	steer		8.84 ppm		200 kg
Note: Given basal diet 2.							
200	216	non-lactating	steer		8.84 ppm		200 kg
Note: Given basal diet 2.							
216	216	non-lactating	steer		8.84 ppm		200 kg
Note: Given basal diet 1 plus 0.9 kg activated carbon							
154	216	non-lactating	steer		8.84 ppm		200 kg
Note: Given basal diet 1 plus 0.9 kg activated carbon							
212	216	non-lactating	steer		8.84 ppm		200 kg
Note: Given basal diet 2 plus 0.9 kg activated charcoal.							
209	216	non-lactating	steer		8.84 ppm		200 kg
Note: Given basal diet 2 plus 0.9 kg activated charcoal.							

Media Concentrations

Day	Beef fat	Beef tissue	Milk fat	Whole milk

Note: Concentration data includes (concentration in reported units / percent fat).

Martin et al., 1976

Journal of Animal Science. 42: 196

Day	Beef fat	Beef tissue	Milk fat	Whole milk
Animal ID 215				
216	13.32 ppm			
230	9.89 ppm			
244	8.42 ppm			
258	4.66 ppm			
272	5.43 ppm			
Animal ID 176				
216	7.92 ppm			
230	6.25 ppm			
244	5.55 ppm			
258	5.14 ppm			
272	4.77 ppm			
Animal ID 182				
216	8.79 ppm			
230	7.59 ppm			
244	6.28 ppm			
272	5.84 ppm			
Animal ID 200				
216	10.67 ppm			
230	7.56 ppm			
244	5.02 ppm			
258	5.37 ppm			
272	4.25 ppm			
Animal ID 216				
216	10.04 ppm			
230	8.88 ppm			
244	8.03 ppm			
258	4.81 ppm			
272	6.58 ppm			

Note: Concentration data includes (concentration in reported units / percent fat).

Martin et al., 1976

Journal of Animal Science. 42: 196

Day	Beef fat	Beef tissue	Milk fat	Whole milk
Animal ID 154				
216	9.68 ppm			
230	7.82 ppm			
244	6.42 ppm			
258	6.12 ppm			
272	5.34 ppm			
Animal ID 212				
216	10.12 ppm			
230	8.72 ppm			
244	6.07 ppm			
258	5.72 ppm			
272	5.60 ppm			
Animal ID 209				
216	10.57 ppm			
230	8.57 ppm			
244	5.52 ppm			
258	6.80 ppm			
272	7.55 ppm			

Note: Concentration data includes (concentration in reported units / percent fat).

McKellar et al., 1976

Journal of Agricultural and Food Chemistry. 24: 283

Cows were fed rations containing chlorpyrifos at 5 levels from 0.3 - 30 ppm for 2 weeks at each level. Data is an average of 3 cows. The highest and final dose is reported.

chlorpyrifos

Experiment Comments: Animals were exposed to chlorpyrifos at 0.3, 1, 3, 10, and 30 ppm for 14 days consecutively at each level. Chlorpyrifos was not detected in milk at < 30 ppm or in cream at < 10 ppm. Data presented as composite of the 3 cows. Assumed feed is dry weight.

Analytical Method: Fortified feeds were prepared by blending concentrates of chlorpyrifos dissolved in acetone on silicone gel. Used GC methods to measure residue. Recoveries were 78-92%

Animal Data

Animal ID	Days Dosed	Lactation status	Description	Chemical Intake Rate	Feed Concentration	Feed Intake Rate	Weight
1	14	lactating	Holstein		30 ppm	36 lbsDW/d	1160 lbs

Note: Average of 3 cows

Media Concentrations

Day	Beef fat	Beef tissue	Milk fat	Whole milk
Animal ID 1				
3				0.01 ppm
6				0.01 ppm
10				0.01 ppm
11				0.01 ppm
11				0.1 ppm / 45% (medium-heavy cream)
12				0.01 ppm
12				0.1 ppm / 45% (medium-heavy cream)
13				0.09 ppm / 45% (medium-heavy cream)
13				0.01 ppm

Note: Concentration data includes (concentration in reported units / percent fat).

McLachlan et al., 1980

Chemosphere. 20: 1013

This study examined the behavior of PCDD/F in a dairy cow under natural conditions. The 2,3,7,8-substituted tetra- to hexa-chlorinated dioxin and furan isomers were transferred to the milk in significant quantities. The remainder was largely either degraded or stored in the animal. A factor of 20% was found for the transfer of 2,3,7,8-Cl4DD toxic equivalents from feed to milk. The lower chlorinated congeners were better absorbed in the digestive tract than the higher chlorinated congeners. Both milk and feces were important excretion routes for the persistent congeners.

2,3,7,8-TCDD

Experiment Comments: Note: Media concentrations are calculated from the reported chemical flux out of the cow (ng/d) divided by the daily milk production (28 L/d).

Analytical Method: The cow was milked twice daily. Samples of the feed were collected daily, but concentrations of the dioxins were not controlled by the experiment. Feed samples were blended in an acetone:water mixture and extracted with hexane. Milk fat samples were mixed with Na2SO4 and eluted with acetone:n-hexane. Samples were analyzed by mass spectrometer. Columns were used for homologue sum measurements and isomer-specific analysis.

Animal Data

Animal ID	Days Dosed	Lactation status	Description	Chemical Intake Rate	Feed Concentration	Feed Intake Rate	Weight
1	100	lactating	Simmenthal	1.32 ng/d		52.5 kgWW/d	650 kg
Note: Her name is Xarne, she calved 2 months prior to study							

Media Concentrations

Day	Beef fat	Beef tissue	Milk fat	Whole milk
Animal ID 1				
100				0.016 ng/L / 5%

HpCDD, 1,2,3,4,6,7,8-

Experiment Comments: Note: Media concentrations are calculated from the reported chemical flux out of the cow (ng/d) divided by the daily milk production (28 L/d).

Analytical Method: The cow was milked twice daily. Samples of the feed were collected daily, but concentrations of the dioxins were not controlled by the experiment. Feed samples were blended in an acetone:water mixture and extracted with hexane. Milk fat samples were mixed with Na2SO4 and eluted with acetone:n-hexane. Samples were analyzed by mass spectrometer. Columns were used for homologue sum measurements and isomer-specific analysis.

Note: Concentration data includes (concentration in reported units / percent fat).

McLachlan et al., 1980

Chemosphere. 20: 1013

Animal Data

Animal ID	Days Dosed	Lactation status	Description	Chemical Intake Rate	Feed Concentration	Feed Intake Rate	Weight
1	100	lactating	Simmenthal	70.9 ng/d		52.5 kgWW/d	650 kg

Note: Her name is Xarne, she calved 2 months prior to study

Media Concentrations

Day	Beef fat	Beef tissue	Milk fat	Whole milk
Animal ID 1				
100				0.073 ng/L / 5%

HpCDF, 1,2,3,4,6,7,8-

Experiment Comments: Note: Media concentrations are calculated from the reported chemical flux out of the cow (ng/d) divided by the daily milk production (28 L/d).

Analytical Method: The cow was milked twice daily. Samples of the feed were collected daily, but concentrations of the dioxins were not controlled by the experiment. Feed samples were blended in an acetone:water mixture and extracted with hexane. Milk fat samples were mixed with Na2SO4 and eluted with acetone:n-hexane. Samples were analyzed by mass spectrometer. Columns were used for homologue sum measurements and isomer-specific analysis.

Animal Data

Animal ID	Days Dosed	Lactation status	Description	Chemical Intake Rate	Feed Concentration	Feed Intake Rate	Weight
1	100	lactating	Simmenthal	20.2 ng/d		52.5 kgWW/d	650 kg

Note: Her name is Xarne, she calved 2 months prior to study

Media Concentrations

Day	Beef fat	Beef tissue	Milk fat	Whole milk
Animal ID 1				
100				0.024 ng/L / 5%

HpCDF, 1,2,3,4,7,8,9-

Experiment Comments: Note: Media concentrations are calculated from the reported chemical flux out of the cow (ng/d) divided by the daily milk production (28 L/d).

Note: Concentration data includes (concentration in reported units / percent fat).

McLachlan et al., 1980

Chemosphere. 20: 1013

Analytical Method: The cow was milked twice daily. Samples of the feed were collected daily, but concentrations of the dioxins were not controlled by the experiment. Feed samples were blended in an acetone:water mixture and extracted with hexane. Milk fat samples were mixed with Na2SO4 and eluted with acetone:n-hexane. Samples were analyzed by mass spectrometer. Columns were used for homologue sum measurements and isomer-specific analysis.

Animal Data

Animal ID	Days Dosed	Lactation status	Description	Chemical Intake Rate	Feed Concentration	Feed Intake Rate	Weight
1	100	lactating	Simmenthal	1.25 ng/d		52.5 kgWW/d	650 kg
Note: Her name is Xarne, she calved 2 months prior to study							

Media Concentrations

Day	Beef fat	Beef tissue	Milk fat	Whole milk
Animal ID 1				
100				0.0036 ng/L / 5%

HxCDD, 1,2,3,4,7,8-

Experiment Comments: Note: Media concentrations are calculated from the reported chemical flux out of the cow (ng/d) divided by the daily milk production (28 L/d).

Analytical Method: The cow was milked twice daily. Samples of the feed were collected daily, but concentrations of the dioxins were not controlled by the experiment. Feed samples were blended in an acetone:water mixture and extracted with hexane. Milk fat samples were mixed with Na2SO4 and eluted with acetone:n-hexane. Samples were analyzed by mass spectrometer. Columns were used for homologue sum measurements and isomer-specific analysis.

Animal Data

Animal ID	Days Dosed	Lactation status	Description	Chemical Intake Rate	Feed Concentration	Feed Intake Rate	Weight
1	100	lactating	Simmenthal	1.29 ng/d		52.5 kgWW/d	650 kg
Note: Her name is Xarne, she calved 2 months prior to study							

Media Concentrations

Day	Beef fat	Beef tissue	Milk fat	Whole milk

Note: Concentration data includes (concentration in reported units / percent fat).

McLachlan et al., 1980

Chemosphere. 20: 1013

Day	Beef fat	Beef tissue	Milk fat	Whole milk
Animal ID 1				
100				0.0075 ng/L / 5%

HxCDD, 1,2,3,6,7,8-

Experiment Comments: Note: Media concentrations are calculated from the reported chemical flux out of the cow (ng/d) divided by the daily milk production (28 L/d).

Analytical Method: The cow was milked twice daily. Samples of the feed were collected daily, but concentrations of the dioxins were not controlled by the experiment. Feed samples were blended in an acetone:water mixture and extracted with hexane. Milk fat samples were mixed with Na2SO4 and eluted with acetone:n-hexane. Samples were analyzed by mass spectrometer. Columns were used for homologue sum measurements and isomer-specific analysis.

Animal Data

Animal ID	Days Dosed	Lactation status	Description	Chemical Intake Rate	Feed Concentration	Feed Intake Rate	Weight
1	100	lactating	Simmenthal	4.59 ng/d		52.5 kgWW/d	650 kg
Note: Her name is Xarne, she calved 2 months prior to study							

Media Concentrations

Day	Beef fat	Beef tissue	Milk fat	Whole milk
Animal ID 1				
100				0.023 ng/L / 5%

HxCDD, 1,2,3,7,8,9-

Experiment Comments: Note: Media concentrations are calculated from the reported chemical flux out of the cow (ng/d) divided by the daily milk production (28 L/d).

Analytical Method: The cow was milked twice daily. Samples of the feed were collected daily, but concentrations of the dioxins were not controlled by the experiment. Feed samples were blended in an acetone:water mixture and extracted with hexane. Milk fat samples were mixed with Na2SO4 and eluted with acetone:n-hexane. Samples were analyzed by mass spectrometer. Columns were used for homologue sum measurements and isomer-specific analysis.

Animal Data

Note: Concentration data includes (concentration in reported units / percent fat).

McLachlan et al., 1980

Chemosphere. 20: 1013

Animal ID	Days Dosed	Lactation status	Description	Chemical Intake Rate	Feed Concentration	Feed Intake Rate	Weight
1	100	lactating	Simmenthal	2.00 ng/d		52.5 kgWW/d	650 kg

Note: Her name is Xarne, she calved 2 months prior to study

Media Concentrations

Day	Beef fat	Beef tissue	Milk fat	Whole milk
Animal ID 1				
100				0.013 ng/L / 5%

HxCDF, 1,2,3,4,7,8-

Experiment Comments: Note: Media concentrations are calculated from the reported chemical flux out of the cow (ng/d) divided by the daily milk production (28 L/d).

Analytical Method: The cow was milked twice daily. Samples of the feed were collected daily, but concentrations of the dioxins were not controlled by the experiment. Feed samples were blended in an acetone:water mixture and extracted with hexane. Milk fat samples were mixed with Na2SO4 and eluted with acetone:n-hexane. Samples were analyzed by mass spectrometer. Columns were used for homologue sum measurements and isomer-specific analysis.

Animal Data

Animal ID	Days Dosed	Lactation status	Description	Chemical Intake Rate	Feed Concentration	Feed Intake Rate	Weight
1	100	lactating	Simmenthal	2.39 ng/d		52.5 kgWW/d	650 kg

Note: Her name is Xarne, she calved 2 months prior to study

Media Concentrations

Day	Beef fat	Beef tissue	Milk fat	Whole milk
Animal ID 1				
100				0.016 ng/L / 5%

HxCDF, 1,2,3,6,7,8-

Experiment Comments: Note: Media concentrations are calculated from the reported chemical flux out of the cow (ng/d) divided by the daily milk production (28 L/d).

Analytical Method: The cow was milked twice daily. Samples of the feed were collected daily, but

Note: Concentration data includes (concentration in reported units / percent fat).

McLachlan et al., 1980

Chemosphere. 20: 1013

concentrations of the dioxins were not controlled by the experiment. Feed samples were blended in an acetone:water mixture and extracted with hexane. Milk fat samples were mixed with Na2SO4 and eluted with acetone:n-hexane. Samples were analyzed by mass spectrometer. Columns were used for homologue sum measurements and isomer-specific analysis.

Animal Data

Animal ID	Days Dosed	Lactation status	Description	Chemical Intake Rate	Feed Concentration	Feed Intake Rate	Weight
1	100	lactating	Simmenthal	2.17 ng/d		52.5 kgWW/d	650 kg

Note: Her name is Xarne, she calved 2 months prior to study

Media Concentrations

Day	Beef fat	Beef tissue	Milk fat	Whole milk
Animal ID 1				
100				0.013 ng/L / 5%

HxCDF, 2,3,4,6,7,8-

Experiment Comments: Note: Media concentrations are calculated from the reported chemical flux out of the cow (ng/d) divided by the daily milk production (28 L/d).

Analytical Method: The cow was milked twice daily. Samples of the feed were collected daily, but concentrations of the dioxins were not controlled by the experiment. Feed samples were blended in an acetone:water mixture and extracted with hexane. Milk fat samples were mixed with Na2SO4 and eluted with acetone:n-hexane. Samples were analyzed by mass spectrometer. Columns were used for homologue sum measurements and isomer-specific analysis.

Animal Data

Animal ID	Days Dosed	Lactation status	Description	Chemical Intake Rate	Feed Concentration	Feed Intake Rate	Weight
1	100	lactating	Simmenthal	3.48 ng/d		52.5 kgWW/d	650 kg

Note: Her name is Xarne, she calved 2 months prior to study

Media Concentrations

Day	Beef fat	Beef tissue	Milk fat	Whole milk

Note: Concentration data includes (concentration in reported units / percent fat).

McLachlan et al., 1980

Chemosphere. 20: 1013

Day	Beef fat	Beef tissue	Milk fat	Whole milk
Animal ID 1				
100				0.018 ng/L / 5%

OCDD

Experiment Comments: Note: Media concentrations are calculated from the reported chemical flux out of the cow (ng/d) divided by the daily milk production (28 L/d).

Analytical Method: The cow was milked twice daily. Samples of the feed were collected daily, but concentrations of the dioxins were not controlled by the experiment. Feed samples were blended in an acetone:water mixture and extracted with hexane. Milk fat samples were mixed with Na2SO4 and eluted with acetone:n-hexane. Samples were analyzed by mass spectrometer. Columns were used for homologue sum measurements and isomer-specific analysis.

Animal Data

Animal ID	Days Dosed	Lactation status	Description	Chemical Intake Rate	Feed Concentration	Feed Intake Rate	Weight
1	100	lactating	Simmenthal	367 ng/d		52.5 kgWW/d	650 kg
Note: Her name is Xarne, she calved 2 months prior to study							

Media Concentrations

Day	Beef fat	Beef tissue	Milk fat	Whole milk
Animal ID 1				
100				0.546 ng/L / 5%

OCDF

Experiment Comments: Note: Media concentrations are calculated from the reported chemical flux out of the cow (ng/d) divided by the daily milk production (28 L/d).

Analytical Method: The cow was milked twice daily. Samples of the feed were collected daily, but concentrations of the dioxins were not controlled by the experiment. Feed samples were blended in an acetone:water mixture and extracted with hexane. Milk fat samples were mixed with Na2SO4 and eluted with acetone:n-hexane. Samples were analyzed by mass spectrometer. Columns were used for homologue sum measurements and isomer-specific analysis.

Animal Data

Note: Concentration data includes (concentration in reported units / percent fat).

McLachlan et al., 1980

Chemosphere. 20: 1013

Animal ID	Days Dosed	Lactation status	Description	Chemical Intake Rate	Feed Concentration	Feed Intake Rate	Weight
1	100	lactating	Simmenthal	56.8 ng/d		52.5 kgWW/d	650 kg

Note: Her name is Xarne, she calved 2 months prior to study

Media Concentrations

Day	Beef fat	Beef tissue	Milk fat	Whole milk
Animal ID 1				
100				0.032 ng/L / 5%

PeCDD, 1,2,3,7,8-

Experiment Comments: Note: Media concentrations are calculated from the reported chemical flux out of the cow (ng/d) divided by the daily milk production (28 L/d).

Analytical Method: The cow was milked twice daily. Samples of the feed were monitored daily, but concentrations of the dioxins were not controlled by the experiment. Feed samples were blended in an acetone:water mixture and extracted with hexane. Milk fat samples were mixed with Na2SO4 and eluted with acetone:n-hexane. Samples were analyzed by mass spectrometer. Columns were used for homologue sum measurements and isomer-specific analysis.

Animal Data

Animal ID	Days Dosed	Lactation status	Description	Chemical Intake Rate	Feed Concentration	Feed Intake Rate	Weight
1	100	lactating	Simmenthal	1.01 ng/d		52.5 kgWW/d	650 kg

Note: Her name is Xarne, she calved 2 months prior to study

Media Concentrations

Day	Beef fat	Beef tissue	Milk fat	Whole milk
Animal ID 1				
100				0.012 ng/L / 5%

PeCDF, 1,2,3,7,8-

Experiment Comments: Note: Media concentrations are calculated from the reported chemical flux out of the cow (ng/d) divided by the daily milk production (28 L/d).

Analytical Method: The cow was milked twice daily. Samples of the feed were collected daily, but

Note: Concentration data includes (concentration in reported units / percent fat).

McLachlan et al., 1980

Chemosphere. 20: 1013

concentrations of the dioxins were not controlled by the experiment. Feed samples were blended in an acetone:water mixture and extracted with hexane. Milk fat samples were mixed with Na2SO4 and eluted with acetone:n-hexane. Samples were analyzed by mass spectrometer. Columns were used for homologue sum measurements and isomer-specific analysis.

Animal Data

Animal ID	Days Dosed	Lactation status	Description	Chemical Intake Rate	Feed Concentration	Feed Intake Rate	Weight
1	100	lactating	Simmenthal	2.55 ng/d		52.5 kgWW/d	650 kg

Note: Her name is Xarne, she calved 2 months prior to study

Media Concentrations

Day	Beef fat	Beef tissue	Milk fat	Whole milk
Animal ID 1				
100				0.0054 ng/L / 5%

PeCDF, 2,3,4,7,8-

Experiment Comments: Note: Media concentrations are calculated from the reported chemical flux out of the cow (ng/d) divided by the daily milk production (28 L/d).

Analytical Method: The cow was milked twice daily. Samples of the feed were collected daily, but concentrations of the dioxins were not controlled by the experiment. Feed samples were blended in an acetone:water mixture and extracted with hexane. Milk fat samples were mixed with Na2SO4 and eluted with acetone:n-hexane. Samples were analyzed by mass spectrometer. Columns were used for homologue sum measurements and isomer-specific analysis.

Animal Data

Animal ID	Days Dosed	Lactation status	Description	Chemical Intake Rate	Feed Concentration	Feed Intake Rate	Weight
1	100	lactating	Simmenthal	3.50 ng/d		52.5 kgWW/d	650 kg

Note: Her name is Xarne, she calved 2 months prior to study

Media Concentrations

Day	Beef fat	Beef tissue	Milk fat	Whole milk

Note: Concentration data includes (concentration in reported units / percent fat).

McLachlan et al., 1980

Chemosphere. 20: 1013

Day	Beef fat	Beef tissue	Milk fat	Whole milk
Animal ID 1				
100				0.031 ng/L / 5%

TCDF, 2,3,7,8-

Experiment Comments: Note: Media concentrations are calculated from the reported chemical flux out of the cow (ng/d) divided by the daily milk production (28 L/d).

Analytical Method: The cow was milked twice daily. Samples of the feed were collected daily, but concentrations of the dioxins were not controlled by the experiment. Feed samples were blended in an acetone:water mixture and extracted with hexane. Milk fat samples were mixed with Na2SO4 and eluted with acetone:n-hexane. Samples were analyzed by mass spectrometer. Columns were used for homologue sum measurements and isomer-specific analysis.

Animal Data

Animal ID	Days Dosed	Lactation status	Description	Chemical Intake Rate	Feed Concentration	Feed Intake Rate	Weight
1	100	lactating	Simmenthal	2.50 ng/d		52.5 kgWW/d	650 kg
Note: Her name is Xarne, she calved 2 months prior to study							

Media Concentrations

Day	Beef fat	Beef tissue	Milk fat	Whole milk
Animal ID 1				
100				0.0068 ng/L / 5%

Note: Concentration data includes (concentration in reported units / percent fat).

Miller et al., 1976

Journal of Agricultural and Food Chemistry. 24: 687

Three dairy cows were fed Thompson-Hayward TH 6040 (also known as diflubenzuron, Dimilin, N-chlorophenyl-N-2,6-difluorobenzoylurea) at rates ranging from 0.25 to 16 mg/kg BW/day for 4-5 months. No TH 6040 was detected in milk of cow 5036 when fed up to 8 mg/kg BW/d; there was 0.02 ppm in milk when fed 16 mg/kg BW/d. Tissue residue data were provided for two cows (1652 and 5036) but no data were provided for the other cow (5086). No milk data were provided for cows 1652 and 5086.

di-flubenzuron

Experiment Comments: Muscle tissues analyzed but no dimilin detected; cow 5036 data are for the final 13 week period that animal was dosed at 16 mg/kg BW/d. Note that cow 5036, prior to the dose at 16 mg/kg BW/d was exposed at levels from 1-8 mg/kg BW/d for 2 week periods.

Analytical Method: Cow 1652 was fed 1 mg/kg BW/d diflubenzuron from 10/2/73 to 1/29/74; cow 5036 was fed rates increasing from 1 to 8 mg/kg BW/d diflubenzuron for 2-week periods starting 6/1/74 and the dose was increased to 16 mg/kg BW/d from 7/27/74 to 10/29/74; cow 5086 (no data presented) was fed 0.25 mg/kg BW/d from 6/29/74 to 10/30/74. Cream was separated from milk samples and extracted separately from the milk, which was extracted by "the regular procedure." Ethyl acetate extracts from the cream and milk were combined into one sample. The lowest detectable level of diflubenzuron was 5 ng. Cows were slaughtered on the final day of feeding. Kidney, liver, heart, muscle, renal fat, omental fat, diaphragm fat, and subcutaneous fat samples were collected and blended with sodium sulfate and ethyl acetate. Recoveries from fat and muscle tissue samples were 93% and 94%; the detection limit was 0.1 ppm. In another laboratory, recoveries were 89% and 94%, respectively.

Animal Data

Animal ID	Days Dosed	Lactation status	Description	Chemical Intake Rate	Feed Concentration	Feed Intake Rate	Weight
1652	120	lactating		1 mg/kgBW/d			
5036	95	lactating		16 mg/kgBW/d			

Media Concentrations

Day	Beef fat	Beef tissue	Milk fat	Whole milk
Animal ID 1652				
99	0.1 ppm (omental fat)			
Animal ID 5036				
91	0.15 ppm (subcutaneous fat; ave. 2 labs)			

Note: Concentration data includes (concentration in reported units / percent fat).

Miller et al., 1976

Journal of Agricultural and Food Chemistry. 24: 687

Day	Beef fat	Beef tissue	Milk fat	Whole milk
91	0.15 ppm (omental fat; ave. 2 labs)			
91	0.175 ppm (diaphragmatic fat)			0.02 ppm

The uptake and excretion of the herbicide dicamba was studied in a lactating cow. The animal was administered an oral treatment equivalent to 2.2 mg/kg/d, or 60 ppm, of dietary dicamba over a five day period. The chemical was rapidly absorbed, slightly metabolized (20%), and rapidly excreted by the cow (90% of administered dicamba eliminated via feces and urine). No residues of dicamba were present in milk, only the metabolite (DCHBA). This was also the major component of radioactivity in tissue samples. The data show that exposure to the chemical through milk or beef ingestion should be not be a concern.

dicamba

Experiment Comments: Dicamba administered by a gelatin capsule. A dose of 450 mg of 14C dicamba was administered twice daily. The estimation of feed concentration was provided in the article assuming the animal ingested 3-4% of its body weight. The body weight was then calculated based on this assumption. Milk samples are averages of the morning and evening sample.

Analytical Method: The total amount of radiolabeled C-14 was determined using liquid scintillation counting. Samples were also analyzed by thin-layer chromatography confirmed by GLC and mass spectroscopy. There are no data on recovery rates.

Animal Data

Animal ID	Days Dosed	Lactation status	Description	Chemical Intake Rate	Feed Concentration	Feed Intake Rate	Weight
1	5	lactating	Jersey	900 mg/d	60 ppm	14 kgDW/d	411 kg

Note: Chemical intake rate also reported as 2.2mg/kgBW/d.

Media Concentrations

Day	Beef fat	Beef tissue	Milk fat	Whole milk
Animal ID 1				
1				0.017 ppm
2				0.035 ppm
3				0.035 ppm
4				0.025 ppm
5	0.02 ppm (omental)	0.025 ppm (average of longissimus dorsi and triceps)		0.02 ppm

Note: Concentration data includes (concentration in reported units / percent fat).

Parker et al., 1980

Toxicology and Applied Pharmacology. 55: 359

Four groups of 3 female yearling Holstein cattle each were exposed for 160 days to analytical pentachlorophenol (aPCP), technical PCP (tPCP), or a mixture thereof in feed (1-% tPCP+90%Apcp OR 35%tPCP+65%Apcp). A fifth group of 3 animals served as unexposed controls. All treated cattle received 20 mg/kg/d PCP for 42 days, which was reduced to 15 mg/kg/d for the remainder of the study (total of 160 days). Only blood serum was analyzed for PCP. Blood was also assayed for hexachlorobenzene. Liver and adipose tissue were analyzed for chlorinated dibenzodioxin and furan content. tPCP was also analyzed for individual dioxins and furans in order to relate the intake of these chemicals to their resulting concentrations.

HpCDD, 1,2,3,4,6,7,8-

Experiment Comments: Feed intake rates are calculated based on average weekly values. The animal weight is an average weight at the beginning of the experiment. The weight gain is an average per day over the experiment. Animal data are from McConnell et al. (1980).

Analytical Method: Used GC/MS to analyze samples. Overall recoveries were 95%.

Animal Data

Animal ID	Days Dosed	Lactation status	Description	Chemical Intake Rate	Feed Concentration	Feed Intake Rate	Weight
1	160	non-lactating	Female yearling Holsteins	4.17e-3 mg/kgBW/d	136 ppb	7.15 kgDW/d	255 kg

Media Concentrations

Day	Beef fat	Beef tissue	Milk fat	Whole milk
Animal ID 1				
160	52 ppb (+/- 15 ppb)			

HpCDF, 1,2,3,4,6,7,8-

Experiment Comments: Feed intake rates are calculated based on average weekly values. The animal weight is an average weight at the beginning of the experiment. The weight gain is an average per day over the experiment. Animal data are from McConnell et al. (1980).

Analytical Method: Used GC/MS to analyze samples. Overall recoveries were 95%.

Animal Data

Animal ID	Days Dosed	Lactation status	Description	Chemical Intake Rate	Feed Concentration	Feed Intake Rate	Weight
1	160	non-lactating	Female yearling Holsteins	4.20e-4 mg/kgBW/d	13.7 ppb	7.15 kgDW/d	255 kg

Note: Concentration data includes (concentration in reported units / percent fat).

Parker et al., 1980

Toxicology and Applied Pharmacology. 55: 359

Media Concentrations

Day	Beef fat	Beef tissue	Milk fat	Whole milk
Animal ID 1				
160	6.9 ppb (+/- 2.8 ppb)			

HxCDD, 1,2,3,6,7,8-

Experiment Comments: Feed intake rates are calculated based on average weekly values. The animal weight is an average weight at the beginning of the experiment. The weight gain is an average per day over the experiment. Animal data are from McConnell et al. (1980).

Analytical Method: Used GC/MS to analyze samples. Overall recoveries were 95%.

Animal Data

Animal ID	Days Dosed	Lactation status	Description	Chemical Intake Rate	Feed Concentration	Feed Intake Rate	Weight
1	160	non-lactating	Female yearling Holsteins	1.50e-4 mg/kgBW/d	4.91 ppb	7.15 kgDW/d	255 kg

Media Concentrations

Day	Beef fat	Beef tissue	Milk fat	Whole milk
Animal ID 1				
160	16 ppb (+/- 2 ppb)			

HxCDD, 1,2,3,7,8,9-

Experiment Comments: Feed intake rates are calculated based on average weekly values. The animal weight is an average weight at the beginning of the experiment. The weight gain is an average per day over the experiment. Animal data are from McConnell et al. (1980).

Analytical Method: Used GC/MS to analyze samples. Overall recoveries were 95%.

Animal Data

Animal ID	Days Dosed	Lactation status	Description	Chemical Intake Rate	Feed Concentration	Feed Intake Rate	Weight
1	160	non-lactating	Female yearling Holsteins	7.50e-5 mg/kgBW/d	2.46 ppb	7.15 kgDW/d	255 kg

Note: Concentration data includes (concentration in reported units / percent fat).

Parker et al., 1980

Toxicology and Applied Pharmacology. 55: 359

Media Concentrations

Day	Beef fat	Beef tissue	Milk fat	Whole milk
Animal ID 1				
160	0.7 ppb			

OCDD

Experiment Comments: Feed intake rates are calculated based on average weekly values. The animal weight is an average weight at the beginning of the experiment. The weight gain is an average per day over the experiment. Animal data are from McConnell et al. (1980).

Analytical Method: Used GC/MS to analyze samples. Overall recoveries were 95%.

Animal Data

Animal ID	Days Dosed	Lactation status	Description	Chemical Intake Rate	Feed Concentration	Feed Intake Rate	Weight
1	160	non-lactating	Female yearling Holsteins	2.25e-2 mg/kgBW/d	737 ppb	7.15 kgDW/d	255 kg

Media Concentrations

Day	Beef fat	Beef tissue	Milk fat	Whole milk
Animal ID 1				
160	61 ppb (+/- 19 ppb)			

OCDF

Experiment Comments: Feed intake rates are calculated based on average weekly values. The animal weight is an average weight at the beginning of the experiment. The weight gain is an average per day over the experiment. Animal data are from McConnell et al. (1980).

Analytical Method: Used GC/MS to analyze samples. Overall recoveries were 95%.

Animal Data

Animal ID	Days Dosed	Lactation status	Description	Chemical Intake Rate	Feed Concentration	Feed Intake Rate	Weight
1	160	non-lactating	Female yearling Holsteins	1.35e-3 mg/kgBW/d	44.2 ppb	7.15 kgDW/d	255 kg

Note: Concentration data includes (concentration in reported units / percent fat).

Parker et al., 1980

Toxicology and Applied Pharmacology. 55: 359

Media Concentrations

Day	Beef fat	Beef tissue	Milk fat	Whole milk
Animal ID 1				
160	7 ppb (+/- 1 ppb)			

Note: Concentration data includes (concentration in reported units / percent fat).

Polan et al., 1974

Journal of Agricultural and Food Chemistry. 22: 635

Cows were fed concentrate containing 10, 50, 250, or 1250 ppb in feed concentrate of aflatoxin B1 (AFB1) for 14 days. Traces of AFM1 were found in the 50 ppb group, but none at 10 ppb. Regression analyses indicate that concentrate must exceed 46 ppb to be detectable in milk. Two days after treatment cessation, no AFM1 was found in milk. The study was administered in Latin square design, with cows spending 56 days of no contamination between treatment levels.

aflatoxins

Experiment Comments: Note, animal data (e.g., feed intake rates, milk production, etc.) are averages of the 4 cows over the study period.

Analytical Method: Aflatoxin B1 was fed to four cows at 10, 50, 250, or 1250 ppb for 14 days. Administered in Latin square design, each individual cow spent 14 days at a specific dose, 56 days off dose, and then switched to another dose level. In other words, each cow experienced each dose level. AFB1 was administered twice daily by dissolving in a chloroform solution and applying the solution to feed concentrate. Milk samples were extracted for aflatoxins with the modified Jacobson procedure (McKinney, 1972) and Stubblefield and Shannon (1974) cleanup procedure.

Animal Data

Animal ID	Days Dosed	Lactation status	Description	Chemical Intake Rate	Feed Concentration	Feed Intake Rate	Weight
50	14	lactating		250.0 ug/d	16.2 ppb	15.4 kgDW/d	
250	14	lactating		1342.0 ug/d	86.0 ppb	15.6 kgDW/d	
1250	14	lactating		7313.0 ug/d	466.0 ppb	15.7 kgDW/d	

Media Concentrations

Day	Beef fat	Beef tissue	Milk fat	Whole milk
Animal ID 50				
4				0.01 ppb
8				0.01 ppb
Animal ID 250				
4				0.26 ppb
8				0.23 ppb
Animal ID 1250				
4				0.82 ppb
8				0.86 ppb

Note: Concentration data includes (concentration in reported units / percent fat).

Potter et al., 1974

Journal of Agricultural and Food Chemistry. 22: 889

Two feeding trials were conducted using carbon-14 labeled dieldrin to determine if dieldrin metabolites identified by other researchers for nonruminant animals could also be identified in the milk or tissue of cows. A total of five cows were fed grain concentrate spiked with the carbon-14 labeled dieldrin. The first experiment was conducted for 21 days on two animals. One animal was fed 1.43 mg/d and one was fed 1.62 mg/d of dieldrin. The second experiment was conducted for 41 days on three animals, which were fed 2.5 mg/d of dieldrin. Dieldrin metabolites were not detected but dieldrin was detected in both milk and animal tissues.

dieldrin

Experiment Comments: Chemical intake rate was calculated using the grain concentrate concentration multiplied by the intake rate of the grain concentrate. Total feed intake rate was calculated as the sum of dairy concentrate and alfalfa hay intake rates and was assumed to be dry. Overall feed concentrations were calculated by dividing the chemical intake rate by the total feed intake rate. Several tissues were sampled, including gastrocnemius muscle and mesenteric fat. The mesenteric fat concentrations exceeded the subcutaneous fat concentrations in all cases.

Analytical Method: Determined chemical purity of diedrin - 14C standards was at 98% or above using infrared spectrometry. Milk and tissue samples were analyzed used 14C scintillation counting and GLPC analysis. For the 14C analysis, toluene-14C was used as an internal standard. For the GLPC analysis, a GC with tritium electron capture detector was used. Milk samples for this analysis were exacted directly using acrylonitrile. Tissue samples were refluxed for one hour using hexane. Recoveries in milk samples were not significantly different from 100%. Data are reported for the GLPC analysis.

Animal Data

Animal ID	Days Dosed	Lactation status	Description	Chemical Intake Rate	Feed Concentration	Feed Intake Rate	Weight
3A	41	lactating	guernsey cows	2.5 mg/d	0.21 mg/kg	11.9 kgDW/d	496 kg
4	41	lactating	guernsey cows	2.5 mg/d	0.36 mg/kg	6.9 kgDW/d	480 kg
Note: Milk production dropped and feed consumption dropped on day 5							
5	41	lactating	guernsey cows	2.5 mg/d	0.21 mg/kg	11.9 kgDW/d	528 kg
3	21	lactating	guernsey cows	1.62 mg/d	0.102 mg/kg	15.9 kgDW/d	503 kg
417	21	lactating	guernsey cows	1.43 mg/d	0.119 mg/kg	11.9 kgDW/d	587 kg
Note: Cow developed traumatic gastritis on 10th day. Milk production dropped from 18 to 5 kg/d.							

Media Concentrations

Day	Beef fat	Beef tissue	Milk fat	Whole milk
Animal ID 3A				
2				0.001 ppm / 4.7%

Note: Concentration data includes (concentration in reported units / percent fat).

Potter et al., 1974

Journal of Agricultural and Food Chemistry. 22: 889

Day	Beef fat	Beef tissue	Milk fat	Whole milk
8				0.028 ppm / 4.7%
15			0.5 ppm / 4.7% (butterfat)	0.024 ppm / 4.7%
23			0.65 ppm / 4.7% (butterfat)	0.029 ppm / 4.7%
28			0.62 ppm / 4.7% (butterfat)	0.032 ppm / 4.7%
34			0.63 ppm / 4.7% (butterfat)	0.030 ppm / 4.7%
39			0.77 ppm / 4.7% (butterfat)	0.038 ppm / 4.7%
41	0.26 ppm (subcutaneous fat)	0.018 ppm (quadriceps muscle)	0.64 ppm / 4.7% (butterfat)	0.041 ppm / 4.7%
Animal ID 4				
2				0.001 ppm / 4.7%
8				0.021 ppm / 4.7%
15			0.6 ppm / 4.7% (butterfat)	0.025 ppm / 4.7%
23			1.01 ppm / 4.7% (butterfat)	0.037 ppm / 4.7%
28			0.79 ppm / 4.7% (butterfat)	0.037 ppm / 4.7%
34			1.43 ppm / 4.7% (butterfat)	0.053 ppm / 4.7%
39			1.75 ppm / 4.7% (butterfat)	0.053 ppm / 4.7%
41	0.41 ppm (subcutaneous fat)	0.022 ppm (quadriceps muscle)	1.53 ppm / 4.7% (butterfat)	0.051 ppm / 4.7%
Animal ID 5				
2				0.001 ppm / 5.3%
8				0.014 ppm / 5.3%
15			0.5 ppm / 5.3% (butterfat)	0.025 ppm / 5.3%
23			0.58 ppm / 5.3% (butterfat)	0.026 ppm / 5.3%
28			0.66 ppm / 5.3% (butterfat)	0.031 ppm / 5.3%
34			0.68 ppm / 5.3% (butterfat)	0.035 ppm / 5.3%
39			0.96 ppm / 5.3% (butterfat)	0.042 ppm / 5.3%
41	0.34 ppm (subcutaneous fat)	0.020 ppm (quadriceps muscle)	0.83 ppm / 5.3% (butterfat)	0.042 ppm / 5.3%
Animal ID 3				
1				0.004 ppm / 4.4%
2				0.006 ppm / 4.4%
3				0.009 ppm / 4.4%
6				0.013 ppm / 4.4%

Note: Concentration data includes (concentration in reported units / percent fat).

Potter et al., 1974

Journal of Agricultural and Food Chemistry. 22: 889

Day	Beef fat	Beef tissue	Milk fat	Whole milk
9				0.017 ppm / 4.4%
12				0.023 ppm / 4.4%
15			0.47 ppm / 4.4% (butterfat)	0.018 ppm / 4.4% (Three-sample mean)
17			0.36 ppm / 4.4% (butterfat)	0.016 ppm / 4.4%
19			0.44 ppm / 4.4% (butterfat)	0.021 ppm / 4.4%
21			0.36 ppm / 4.4% (butterfat)	0.015 ppm / 4.4%
Animal ID 417				
1				0.004 ppm / 4.8%
2				0.006 ppm / 4.8%
3				0.010 ppm / 4.8%
6				0.012 ppm / 4.8%
9				0.013 ppm / 4.8%
12				0.023 ppm / 4.8%
15			0.36 ppm / 4.8% (butterfat)	0.015 ppm / 4.8% (Three-sample mean)
17			0.28 ppm / 4.8% (butterfat)	0.015 ppm / 4.8% (Three-sample mean)
19			0.33 ppm / 4.8% (butterfat)	0.019 ppm / 4.8% (Three-sample mean)
21			0.38 ppm / 4.8% (butterfat)	0.017 ppm / 4.8%

Note: Concentration data includes (concentration in reported units / percent fat).

Rumsey and Bond, 1974

Journal of Agricultural and Food Chemistry. 22: 664

16 Angus heifers were fed 1 mg/kg BW aldrin. The primary objective of the study was to compare different nutritional regimens in the heifers (e.g. urea vs. soybean meal, concentrate vs. forage diet, and diethylstilbestrol implants vs. none). The average concentration of aldrin was 7 times greater and dieldrin 14 times greater in fat tissue than in organ tissue. The average tissue concentration of dieldrin was more than 100 times greater than that of aldrin. Animals were slaughtered at 18 months.

dieldrin

Experiment Comments: These heifers began the dose at 56 d old. The results are presented as an average of the 16 specimens, all fed aldrin at the same dose, but with varying nutritional regimens. Calves were weaned at 98 days and then all put on a forage diet, still being fed aldrin.

Analytical Method: The diets of these calves all varied. For the first 84 days, half of the calves were fed a urea supplement and the other half a soybean meal supplement. After weaning, the calves switched to a 87.8% forage diet which was still supplemented with either urea or soybean meal. At 168 and 346 d, half of the heifers were implanted with 12 mg DES. Aldrin was fed by mixing in acetone and ethanol and spreading it over the feed. Samples were prepared with an acetonitrile/hexane partition, and florisil column and analyzed with gas chromatography.

Animal Data

Animal ID	Days Dosed	Lactation status	Description	Chemical Intake Rate	Feed Concentration	Feed Intake Rate	Weight
1	484	non-lactating	Angus heifer	1 mg/kgBW/d			

Note: average of 16 heifers

Media Concentrations

Day	Beef fat	Beef tissue	Milk fat	Whole milk
Animal ID 1				
484		3.5 ppm (diaphragm muscle)		
484	31.2 ppm (subcutaneous)	1.6 ppm (rib eye (longissimus dorsi))		

Note: Concentration data includes (concentration in reported units / percent fat).

Shepherd et al., 1949

Journal of Dairy Science. 32: 549

DDT was applied to fields of alfalfa and later fed to dairy cows for 98-162 days. DDT was applied to hay at rates of 2.4 lb/acre (4 times the typical amount applied) and 0.6 lb/acre. Cows were fed the contaminated hay at a rate of 1 -1.5 lb hay/100 lb live body weight daily and corn silage at rates of 2 lb/100 lb live weight daily. Milk samples were taken every 10 days during the study period and continued to be sampled after the dosing period. Due to field application, the feed concentrations had some variability over time. Several of the cows calved during the study period. The length of the total study period (340 days) demonstrated that DDT levels persisted in milk several hundred days after dosing stopped. DDT output in milk ranged from 5%-30% of the total DDT intake. DDT residues were noticed in milk samples after only a few days on the contaminated feed.

DDT

Experiment Comments: Feed concentrations, milk production, and chemical intake rates are averages over the study period. During the postdose period, some cows remained on dry feed while others went out to pasture, which may account for some differences in depuration.

Analytical Method: Residue on the hay was measured by the total chlorine method. Residues in milk were measured by colorimetric method and were composite milk samples from 2 days.

Animal Data

Animal ID	Days Dosed	Lactation status	Description	Chemical Intake Rate	Feed Concentration	Feed Intake Rate	Weight
1638	162	lactating	Holstein	553 mg/d	116.6 mg/kgDW		1300 lbs
Note: Calved approx. 1 month into dosing. Cow turned to pasture post dose.							
1666	111	lactating	Holstein	727 mg/d	114.6 mg/kgDW		1475 lbs
Note: Calved 1 month before dosing. After dosing cow was fed uncontaminated hay.							
X-47	110	lactating	Crossbred	303 mg/d	114.6 mg/kgDW		1175 lbs
Note: Calved approx. 2 weeks before dosing. Turned to pasture after dosing.							
X-16	98	lactating	Crossbred	109 mg/d	17.1 mg/kgDW		
Note: Calved 1 month before dosing. Turned to pasture after dosing stopped.							

Media Concentrations

Day	Beef fat	Beef tissue	Milk fat	Whole milk
Animal ID 1638				
41			222.6 mg/kg	8.9 mg/kg
51			259.1 mg/kg	10.1 mg/kg
61			217.8 mg/kg	7.4 mg/kg
71			174.6 mg/kg	6.9 mg/kg
81			250.0 mg/kg	9.0 mg/kg
91			186.2 mg/kg	6.7 mg/kg

Note: Concentration data includes (concentration in reported units / percent fat).

Shepherd et al., 1949

Journal of Dairy Science. 32: 549

Day	Beef fat	Beef tissue	Milk fat	Whole milk
101			186.1 mg/kg	6.8 mg/kg
111			105.3 mg/kg	4.0 mg/kg
121			166.7 mg/kg	6.0 mg/kg
131			221.2 mg/kg	8.4 mg/kg
141			191.3 mg/kg	6.7 mg/kg
151			149.7 mg/kg	6.4 mg/kg
161			82.9 mg/kg	2.9 mg/kg
171			49.6 mg/kg	1.6 mg/kg
181			24.3 mg/kg	0.9 mg/kg
191			13.3 mg/kg	0.5 mg/kg
201			9.0 mg/kg	0.3 mg/kg
211			4.0 mg/kg	0.2 mg/kg
221			7.9 mg/kg	0.3 mg/kg
231			6.8 mg/kg	0.2 mg/kg
241			5.7 mg/kg	0.2 mg/kg
251			5.3 mg/kg	0.2 mg/kg
261			8.5 mg/kg	0.3 mg/kg
271			2.9 mg/kg	0.1 mg/kg
281			5.1 mg/kg	0.2 mg/kg
291			2.3 mg/kg	0.1 mg/kg
301			5.5 mg/kg	0.2 mg/kg
311			3.0 mg/kg	0.1 mg/kg
321			2.6 mg/kg	0.1 mg/kg
Animal ID 1666				
1			69.6 mg/kg	3.2 mg/kg
11			86.4 mg/kg	3.8 mg/kg
21			111.4 mg/kg	4.9 mg/kg
31			185.0 mg/kg	8.7 mg/kg
41			152.2 mg/kg	6.7 mg/kg
51			146.5 mg/kg	6.3 mg/kg
61			99.0 mg/kg	4.5 mg/kg
71			175.6 mg/kg	7.9 mg/kg

Note: Concentration data includes (concentration in reported units / percent fat).

Shepherd et al., 1949

Journal of Dairy Science. 32: 549

Day	Beef fat	Beef tissue	Milk fat	Whole milk
81			215.5 mg/kg	9.7 mg/kg
91			148.3 mg/kg	6.9 mg/kg
101			159.9 mg/kg	7.2 mg/kg
111			118.1 mg/kg	6.2 mg/kg
121			51.0 mg/kg	2.4 mg/kg
131			50.2 mg/kg	2.4 mg/kg
141			25.3 mg/kg	1.2 mg/kg
151			10.2 mg/kg	0.5 mg/kg
161			16.0 mg/kg	0.6 mg/kg
171			20.0 mg/kg	1.0 mg/kg
181			14.3 mg/kg	0.7 mg/kg
191			7.0 mg/kg	0.4 mg/kg
201			6.4 mg/kg	0.3 mg/kg
211			10.2 mg/kg	0.5 mg/kg
221			6.0 mg/kg	0.3 mg/kg
231			8.4 mg/kg	0.4 mg/kg
241			9.7 mg/kg	0.5 mg/kg
251			2.1 mg/kg	0.4 mg/kg
261			6.2 mg/kg	0.3 mg/kg
271			6.5 mg/kg	0.3 mg/kg
Animal ID X-47				
1			23.7 mg/kg	1.4 mg/kg
11			7.4 mg/kg	0.4 mg/kg
21			47.9 mg/kg	2.3 mg/kg
31			58.4 mg/kg	2.8 mg/kg
41			65.3 mg/kg	3.2 mg/kg
51			52.9 mg/kg	2.7 mg/kg
61			28.9 mg/kg	1.3 mg/kg
71			31.2 mg/kg	1.7 mg/kg
81			60.5 mg/kg	2.9 mg/kg
91			65.2 mg/kg	3.0 mg/kg
101			50.5 mg/kg	2.5 mg/kg

Note: Concentration data includes (concentration in reported units / percent fat).

Shepherd et al., 1949

Journal of Dairy Science. 32: 549

Day	Beef fat	Beef tissue	Milk fat	Whole milk
111			26.0 mg/kg	1.3 mg/kg
121			8.0 mg/kg	0.4 mg/kg
141			2.0 mg/kg	0.1 mg/kg
Animal ID X-16				
11			4.7 mg/kg	0.2 mg/kg
21			14.2 mg/kg	0.6 mg/kg
31			9.3 mg/kg	0.4 mg/kg
41			4.4 mg/kg	0.2 mg/kg
51			5.9 mg/kg	0.3 mg/kg
61			12.8 mg/kg	0.55 mg/kg
71			19 mg/kg	0.8 mg/kg
81			21.1 mg/kg	0.9 mg/kg
91			14.3 mg/kg	0.6 mg/kg
101			6.7 mg/kg	0.3 mg/kg
111			8.4 mg/kg	0.4 mg/kg
121			2.3 mg/kg	0.1 mg/kg

Note: Concentration data includes (concentration in reported units / percent fat).

St.John and Lisk, 1975

Bulletin of Environmental Contamination and Toxicology. 13: 433

The herbicide kerb was fed to a lactating cow for 4 days at 5 ppm. Excretion rates of residues of equivalent herbicide in milk, urine, and feces were found to be 0.19%, 44.38%, and 4.46%, respectively, of the total dose. So a total of 49.04% of the total equivalent dose was accounted for. The remainder was likely excreted as other metabolites or not detectable.

kerb

Experiment Comments: It should be noted that the maximum concentration in milk was detected the day after the last feeding, at 0.04 ppm. We could not calculate this reported measurement using the methods previously used from the table's cumulative data. As a result, only the concentration explicitly reported by the researchers will be used. Feed intake assumed to be wet weight.

Analytical Method: Pure kerb was fed to cow in acetone, thoroughly mixed with the evening grain. Milk samples were taken twice daily and were combined for analysis. The kerb was converted to methyl 3,5-dichlorobenzoate by digestion of the sample with sulfuric acid and methanol. They were then analyzed by column chromatography on florisil and final analysis with electron affinity gas chromatography.

Animal Data

Animal ID	Days Dosed	Lactation status	Description	Chemical Intake Rate	Feed Concentration	Feed Intake Rate	Weight
1	4	lactating	Holstein	0.114 g/d	5 ppm	22.7 kgWW/d	546 kg

Media Concentrations

Day	Beef fat	Beef tissue	Milk fat	Whole milk	
Animal ID 1					
5				0.04 ppm / 3.3%	(From paper's text.)

Note: Concentration data includes (concentration in reported units / percent fat).

Thomas et al., 1951

Journal of Dairy Science. 34: 203

DDT in oil solution and alfalfa containing various amounts of DDT were fed to 15 calves for 160-230 days. Feeding began at age 10 days and all animals were slaughtered by the age of 8 months.

DDT

Experiment Comments: All calves were Jersey males. At the age of 10 days, they began feeding on the contaminated alfalfa. All beef tissue concentrations used samples of rib and loin meat.

Analytical Method: A field of alfalfa was sprayed with 0.6 lb technical DDT/acre. Portions were cut 8 days (fed to cows 1-4), 20 days (fed to cows 5-6), and 36 days (fed to cows 7-10) after application. A colorimetric method was used to analyze all meat and fat samples.

Animal Data

Animal ID	Days Dosed	Lactation status	Description	Chemical Intake Rate	Feed Concentration	Feed Intake Rate	Weight
1	230	non-lactating	Jersey male calf	44.3 mg/d	22.1 ppm		69 kg
Note: Chemical intake rate also reported as 0.64mg/kgBW/d. fed alfalfa cut 8 d after spraying							
2	160	non-lactating	Jersey male calf	40.6 mg/d	21.7 ppm		70 kg
Note: Chemical intake rate also reported as 0.58mg/kgBW/d. fed alfalfa cut 8 d after spraying							
3	230	non-lactating	Jersey male calf	38.7 mg/d	16.8 ppm		81 kg
Note: Chemical intake rate also reported as 0.48mg/kgBW/d. fed alfalfa cut 8 d after spraying							
4	230	non-lactating	Jersey male calf	23.0 mg/d	10.8 ppm		77 kg
Note: Chemical intake rate also reported as 0.3mg/kgBW/d. fed alfalfa cut 20 d after spraying							
5	230	non-lactating	Jersey male calf	16.1 mg/d	6.8 ppm		80 kg
Note: Chemical intake rate also reported as 0.2mg/kgBW/d. fed alfalfa cut 20 d after spraying							
6	230	non-lactating	Jersey male calf	11.3 mg/d	4.8 ppm		113 kg
Note: Chemical intake rate also reported as 0.1mg/kgBW/d. fed alfalfa cut 20 d after spraying							
7	230	non-lactating	Jersey male calf	11.7 mg/d	5.3 ppm		73 kg
Note: Chemical intake rate also reported as 0.16mg/kgBW/d. fed alfalfa cut 36 d after spraying							
8	230	non-lactating	Jersey male calf	6.5 mg/d	3.2 ppm		82 kg
Note: Chemical intake rate also reported as 0.08mg/kgBW/d. fed alfalfa cut 36 d after spraying							
9	230	non-lactating	Jersey male calf	9.6 mg/d	4.3 ppm		80 kg
Note: Chemical intake rate also reported as 0.12mg/kgBW/d. fed alfalfa cut 36 d after spraying							
10	230	non-lactating	Jersey male calf	9.1 mg/d	4.1 ppm		76 kg
Note: Chemical intake rate also reported as 0.12mg/kgBW/d. fed alfalfa cut 36 d after spraying							

Media Concentrations

Day	Beef fat	Beef tissue	Milk fat	Whole milk

Note: Concentration data includes (concentration in reported units / percent fat).

Thomas et al., 1951

Journal of Dairy Science. 34: 203

Day	Beef fat	Beef tissue	Milk fat	Whole milk
Animal ID 1				
230	100 ppm (body fat)	1.7 ppm (rib and loin meat)		
Animal ID 2				
160	80 ppm (body fat)	1.2 ppm (rib and loin meat)		
Animal ID 3				
230	84.8 ppm (body fat)	1.7 ppm (rib and loin meat)		
Animal ID 4				
230	71.8 ppm (body fat)	0.6 ppm (rib and loin meat)		
Animal ID 5				
230	8.1 ppm (body fat)			
Animal ID 6				
230	23 ppm (body fat)	0.2 ppm (rib and loin meat)		
Animal ID 7				
230	9.3 ppm (body fat)			
Animal ID 8				
230	4.4 ppm (body fat)			
Animal ID 9				
230	3.4 ppm (body fat)			
Animal ID 10				
230	4.2 ppm (body fat)	0.6 ppm (rib and loin meat)		

DDT

Experiment Comments: These calves were raised normally until the age of 80 days. Then the study began and continued until slaughter at age 256 days.

Analytical Method: These two calves were fed timothy hay and corn, and DDT by capsule to achieve a feeding rate of 100 mg/kg feed dry weight. A colorimetric method was used to analyze all meat and fat samples.

Animal Data

Note: Concentration data includes (concentration in reported units / percent fat).

Thomas et al., 1951

Journal of Dairy Science. 34: 203

Animal ID	Days Dosed	Lactation status	Description	Chemical Intake Rate	Feed Concentration	Feed Intake Rate	Weight
14	176	non-lactating	Jersey male calf	196.0 mg/d	106.1 ppm		68 kg
Note: Chemical intake rate also reported as 2.9mg/kgBW/d. fed DDT by capsule							
15	176	non-lactating	Jersey male calf	213.0 mg/d	103 ppm		79 kg
Note: Chemical intake rate also reported as 2.7mg/kgBW/d. fed DDT by capsule							

Media Concentrations

Day	Beef fat		Beef tissue		Milk fat	Whole milk
Animal ID 14						
176	340 ppm	(body fat)	12.7 ppm	(rib and loin meat)		
Animal ID 15						
176	345 ppm	(body fat)	13.1 ppm	(rib and loin meat)		

Note: Concentration data includes (concentration in reported units / percent fat).

Treece and Ware, 1965

Journal of Economic Entomology. 58: 218

Lindane was applied to a field of alfalfa at 0.2 lb/acre. The baled hay was fed to lactating cattle for 3 weeks after a 3-week storage period postharvest and then again was fed to cattle after 6 months storage in a barn.

lindane

Experiment Comments: Lindane residues on the hay continued to decrease over time.

Analytical Method: Lindane was applied to a field of alfalfa hay at 0.2 lb/acre. 14 days after application the hay was harvested and stored. After 25 days of storage the feed was administered to the cattle. Approximately 6 months later, feed from the same batch was again administered to the cattle. Lindane residues on hay were measured by gas chromatography. Cows ate a standard grain ration (6 lb/d) plus the contaminated hay ad libitum. Milkfat residues were sampled every few days during exposure.

Animal Data

Animal ID	Days Dosed	Lactation status	Description	Chemical Intake Rate	Feed Concentration	Feed Intake Rate	Weight
1stPerio	21	lactating	Average of 3 cows		0.29 ppm		
Note: Cows ate 6 lb/d grain ration + hay ad libitum.							
2ndPeri	22	lactating	Average of 3 cows		0.24 ppm		
Note: Cows ate 6 lb/d grain ration + hay ad libitum.							

Media Concentrations

Day	Beef fat	Beef tissue	Milk fat	Whole milk
Animal ID 1stPeriod				
2			0.12 ppm	
5			0.45 ppm	
9			0.67 ppm	
13			0.26 ppm	
16			0.72 ppm	
19			0.55 ppm	
Animal ID 2ndPeriod				
5			0.26 ppm	
9			0.45 ppm	
12			0.35 ppm	

Note: Concentration data includes (concentration in reported units / percent fat).

Treece and Ware, 1965

Journal of Economic Entomology. 58: 218

Day	Beef fat	Beef tissue	Milk fat	Whole milk
16			0.46 ppm	
19			0.76 ppm	
23			0.6 ppm	

Note: Concentration data includes (concentration in reported units / percent fat).

Whiting et al., 1973

Jounal of Dairy Science. 56: 1324

Three groups of four unbred heifers were placed on diets containing either 250, 500, or 1000 ppb technical grade DDT. The animals were maintained on the contaminated feed until the end of their first lactation (i.e., 12 months). Milk concentrations were monitored throughout the feeding period. At this point, one animal from each group was slaughtered and tissue samples were taken. During the second lactation, the nine remaining animals were placed on a mostly pesticide-free diet. Milk concentrations were also monitored throughout the second lactation to determine rates of depletion. The metabolites DDE and DDD were also monitored in samples. The predominant metabolite in milk samples was DDE.

DDT

Experiment Comments: Data are an average of four cows. Post-dose data are averages of 3 cows in 2nd lactation. Quantitative data are a sum of DDD, DDE, and DDT residues in milk. Several other tissue samples were taken including renal fat and udder fat. The technical grade DDT fed contained 88% DDT, 12%DDE, and undetectable residues of DDD. Day counts are estimates based on a 30 day month and assuming a 60 day dry period between lactations. Colostrum data not added.

Analytical Method: Analytical methods are not provided in this reference. They are described in this article's reference 19. DDT administered in pelleted field-contaminated alfalfa (described in 19 also).

Animal Data

Animal ID	Days Dosed	Lactation status	Description	Chemical Intake Rate	Feed Concentration	Feed Intake Rate	Weight
Group3	365	lactating	unbred heifer, 1st lactation		1000 ppb		
Note: Average of 4 cows.							
Group2	365	lactating	unbred heifer, 1st lactation		550 ppb		
Note: Average of 4 cows.							
Group1	365	lactating	unbred heifer, 1st lactation		250 ppb		
Note: Average of 4 cows.							

Media Concentrations

Day	Beef fat	Beef tissue	Milk fat	Whole milk
Animal ID Group3				
7			1778 ppb / 4.7%	
14			1897 ppb / 3%	
30			2279 ppb / 3.3%	
60			2650 ppb / 2.4%	
90			2611 ppb / 3%	

Note: Concentration data includes (concentration in reported units / percent fat).

Whiting et al., 1973

Jounal of Dairy Science. 56: 1324

Day	Beef fat	Beef tissue	Milk fat	Whole milk
120			2272 ppb / 2.8%	
150			2858 ppb / 2.8%	
180			2588 ppb / 2.7%	
210			1630 ppb / 3.2%	
240			2064 ppb / 3.2%	
270			2058 ppb / 3.2%	
300			2057 ppb / 3.2%	
330			2000 ppb / 3.7%	
365		32.9 ppb (shoulder muscle - 1 cow)		
365		8.4 ppb (muscle (thigh) - 1 cow)	1513 ppb / 3.6%	
432			809 ppb / 3%	
439			834 ppb / 3.1%	
453			1064 ppb / 1.9%	
483			824 ppb / 1.6%	
513			604 ppb / 2.1%	
543			581 ppb / 2%	
573			412 ppb / 2.4%	
603			322 ppb / 2.7%	
633			329 ppb / 2.6%	
663			324 ppb / 3.1%	
693			228 ppb / 3.6%	
Animal ID Group2				
7			1034 ppb / 3.9%	
14			1194 ppb / 4%	
30			1411 ppb / 3.6%	
60			1377 ppb / 3.9%	
90			1377 ppb / 3.3%	
120			1436 ppb / 3.1%	
150			1348 ppb / 3.3%	
180			1408 ppb / 3.3%	
210			1347 ppb / 3.3%	

Note: Concentration data includes (concentration in reported units / percent fat).

Whiting et al., 1973

Jounal of Dairy Science. 56: 1324

Day	Beef fat	Beef tissue	Milk fat	Whole milk
240			1239 ppb / 3.5%	
270			1145 ppb / 4.2%	
300			1020 ppb / 4.5%	
330			1190 ppb / 4.3%	
365		14.7 ppb (muscle (thigh) - 1 cow)	1116 ppb / 3.9%	
365		32.1 ppb (shoulder muscle - 1 cow)		
432			657 ppb / 4.4%	
439			450 ppb / 3.1%	
453			444 ppb / 3.1%	
483			354 ppb / 2.9%	
513			288 ppb / 2.8%	
543			228 ppb / 3.1%	
573			202 ppb / 3.6%	
603			209 ppb / 2.8%	
633			201 ppb / 2.9%	
663			139 ppb / 3.7%	
693			89 ppb / 3.6%	
Animal ID Group1				
7			859 ppb / 3.4%	
30			880 ppb / 3.5%	
60			814 ppb / 3.4%	
90			763 ppb / 2.9%	
120			1036 ppb / 3.2%	
150			939 ppb / 3%	
180			968 ppb / 3.1%	
210			842 ppb / 2.9%	
240			838 ppb / 2.9%	
270			752 ppb / 3.2%	
300			901 ppb / 3.5%	
330			816 ppb / 3.5%	
365		14.0 ppb (muscle (thigh) - 1 cow)		

Note: Concentration data includes (concentration in reported units / percent fat).

Whiting et al., 1973

Jounal of Dairy Science. 56: 1324

Day	Beef fat	Beef tissue	Milk fat	Whole milk
365		16.0 ppb (shoulder muscle - 1 cow)	754 ppb / 3.1%	
432			398 ppb / 4.2%	
439			357 ppb / 4.2%	
453			340 ppb / 3.3%	
483			285 ppb / 3.1%	
513			224 ppb / 3.2%	
543			208 ppb / 3.3%	
573			203 ppb / 3%	
603			150 ppb / 3.1%	
633			194 ppb / 3%	
663			169 ppb / 3.1%	
693			175 ppb / 4.2%	
723			140 ppb / 3.8%	

Note: Concentration data includes (concentration in reported units / percent fat).

Willett et al., 1987

Fundamental and Applied Toxicology. 9: 60

Holstein cows were fed polychlorinated biphenyls for 60 days at 10 mg/d. After initial study, cows were fed aroclor 1254 for 60 d at 100 mg/d and then another 60 d at 1000 mg/d. Detailed observations were made on the animals' overall health and milk productivity.

aroclor 1254

Experiment Comments: All cows were pregnant during dosing. Data reported are averages of 5 animals. Note, the same cows were used at the 10 mg/d, 100 mg/d, and 1000 mg/d doses for 60 days each.

Analytical Method: Cows were fed aroclor 1254 in gelatin capsules. Cows were artificially inseminated. Lactations were terminated on day 305. Calves were fed dam's milk until weaning at 42 d. After weaning, on day 42 of lactation, cows were slaughtered. Samples of milk were extracted and then analyzed by gas chromatography. Had extensive quality control.

Animal Data

Animal ID	Days Dosed	Lactation status	Description	Chemical Intake Rate	Feed Concentration	Feed Intake Rate	Weight
1	60	lactating	Holstein heifers	10 mg/d		19.5 kgDW/d	550 kg
Note: average of 5 heifers							
2	60	lactating	Holstein heifers	100 mg/d		19.5 kgDW/d	550 kg
Note: average of 5 heifers							
3	60	lactating	Holstein heifers	1000 mg/d		19.5 kgDW/d	550 kg
Note: average of 5 heifers							

Media Concentrations

Day	Beef fat	Beef tissue	Milk fat	Whole milk
Animal ID 1				
60	1.4 ug/g	(adipose tissue)	1.9 ug/g / 4%	
Animal ID 2				
60	6.9 ug/g	(adipose tissue)	10.9 ug/g / 4%	
Animal ID 3				
60	70.0 ug/g	(adipose tissue)	91.3 ug/g / 4%	
252	17.7 ug/g	(adipose tissue)	3.1 ug/g / 4%	

Note: Concentration data includes (concentration in reported units / percent fat).

Williams et al., 1964

Journal of the Association of Official Agricultural Chemists. 47: 1124

Study involved five pesticides (heptachlor epoxide, dieldrin, endrin, lindane, and DDT), all fed simultanously to dairy cattle. Researchers found that heptachlor epoxide and dieldrin transferred to milk in much higher concentrations than the other pesticides.

DDT

Experiment Comments: All animal data are an average of four animals. Feed intake rate assumed to be wet since much higher than 3% of body weight.

Analytical Method: Alcohol solution of the 5 pesticides was added to the grain ration. Used three methods to analyze milk samples: electron capture gas chromatography, microcoulometric gas chromatography, and thin-layer chromatography.

Animal Data

Animal ID	Days Dosed	Lactation status	Description	Chemical Intake Rate	Feed Concentration	Feed Intake Rate	Weight
group B	35	lactating	Holsteins, 1st lactation		0.052 ppm	56 lbsWW/d	1100 lbs
group C	35	lactating	1st lactation, Holstein		0.142 ppm	64 lbsWW/d	1123 lbs
group D	35	lactating	Holstein, 1st lactation		0.302 ppm	68 lbsWW/d	1106 lbs

Media Concentrations

Day	Beef fat	Beef tissue	Milk fat	Whole milk
Animal ID group B				
35				0.004 ppm / 4%
Animal ID group C				
35				0.004 ppm / 4.2%
Animal ID group D				
35				0.007 ppm / 4.1%

dieldrin

Experiment Comments: All animal data are an average of four animals. Feed intake rate assumed to be wet since much higher than 3% of body weight.

Analytical Method: Alcohol solution of the 5 pesticides was added to the grain ration. Used three methods to analyze milk samples: electron capture gas chromatography, microcoulometric gas chromatography, and thin-layer chromatography.

Note: Concentration data includes (concentration in reported units / percent fat).

Williams et al., 1964

Journal of the Association of Official Agricultural Chemists. 47: 1124

Animal Data

Animal ID	Days Dosed	Lactation status	Description	Chemical Intake Rate	Feed Concentration	Feed Intake Rate	Weight
group B	35	lactating	Holstein, 1st lactation		0.052 ppm	56 lbsWW/d	1100 lbs
group C	35	lactating	Holstein, 1st lactation		0.142 ppm	64 lbsWW/d	1123 lbs
group D	35	lactating	Holstein, 1st lactation		0.302 ppm	68 lbsWW/d	1106 lbs

Media Concentrations

Day	Beef fat	Beef tissue	Milk fat	Whole milk
Animal ID group B				
35				0.021 ppm / 4%
Animal ID group C				
35				0.058 ppm / 4.2%
Animal ID group D				
35				0.110 ppm / 4.1%

endrin

Experiment Comments: All animal data are an average of four animals. Feed intake rate assumed to be wet since much higher than 3% of body weight.

Analytical Method: Alcohol solution of the 5 pesticides was added to the grain ration. Used three methods to analyze milk samples: electron capture gas chromatography, microcoulometric gas chromatography, and thin-layer chromatography.

Animal Data

Animal ID	Days Dosed	Lactation status	Description	Chemical Intake Rate	Feed Concentration	Feed Intake Rate	Weight
group B	35	lactating	Hosltein, 1st lactation		0.052 ppm	56 lbsWW/d	1100 lbs
group C	35	lactating	Holstein, 1st lactation		0.142 ppm	64 lbsWW/d	1123 lbs
group D	35	lactating	Holstein, 1st lactation		0.302 ppm	68 lbsWW/d	1106 lbs

Media Concentrations

Day	Beef fat	Beef tissue	Milk fat	Whole milk

Note: Concentration data includes (concentration in reported units / percent fat).

Williams et al., 1964

Journal of the Association of Official Agricultural Chemists. 47: 1124

Day	Beef fat	Beef tissue	Milk fat	Whole milk
Animal ID group B				
35				0.004 ppm / 4%
Animal ID group C				
35				0.010 ppm / 4.2%
Animal ID group D				
35				0.018 ppm / 4.1%

heptachlor epoxide

Experiment Comments: All animal data are an average of four animals. Feed intake rate assumed to be wet since much higher than 3% of body weight.

Analytical Method: Alcohol solution of the 5 pesticides was added to the grain ration. Used three methods to analyze milk samples: electron capture gas chromatography, microcoulometric gas chromatography, and thin-layer chromatography.

Animal Data

Animal ID	Days Dosed	Lactation status	Description	Chemical Intake Rate	Feed Concentration	Feed Intake Rate	Weight
group B	35	lactating	Holstein, 1st lactation		0.052 ppm	56 lbsWW/d	1100 lbs
group C	35	lactating	Holstein, 1st lactation		0.142 ppm	64 lbsWW/d	1123 lbs
group D	35	lactating	Holstein, 1st lactation		0.302 ppm	68 lbsWW/d	1106 lbs

Media Concentrations

Day	Beef fat	Beef tissue	Milk fat	Whole milk
Animal ID group B				
35				0.031 ppm / 4%
Animal ID group C				
35				0.072 ppm / 4.2% (not at steady state)
Animal ID group D				
35				0.14 ppm / 4.1% (not at steady state)

Note: Concentration data includes (concentration in reported units / percent fat).

Williams et al., 1964

Journal of the Association of Official Agricultural Chemists. 47: 1124

lindane

Experiment Comments: All animal data are an average of four animals. Feed intake rate assumed to be wet since much higher than 3% of body weight.

Analytical Method: Alcohol solution of the 5 pesticides was added to the grain ration. Used three methods to analyze milk samples: electron capture gas chromatography, microcoulometric gas chromatography, and thin-layer chromatography.

Animal Data

Animal ID	Days Dosed	Lactation status	Description	Chemical Intake Rate	Feed Concentration	Feed Intake Rate	Weight
group B	35	lactating	Holstein, 1st lactation		0.052 ppm	56 lbsWW/d	1100 lbs
group C	35	lactating	Holstein, 1st lactation		0.142 ppm	64 lbsWW/d	1123 lbs
group D	35	lactating	Holstein, 1st lactation		0.302 ppm	68 lbsWW/d	1106 lbs

Media Concentrations

Day	Beef fat	Beef tissue	Milk fat	Whole milk
Animal ID group B				
35				0.002 ppm / 4%
Animal ID group C				
35				0.006 ppm / 4.2%
Animal ID group D				
35				0.015 ppm / 4.1%

Note: Concentration data includes (concentration in reported units / percent fat).

Wilson and Cook, 1972

Journal of Agricultural and Food Chemistry. 20: 391

Studied the metabolism and excretion of the pesticide HEOD, also known as dieldrin, in lactating cows. Two groups of four cows were used in the experiment. Cows were dosed at a level of 0.1 mg/kgBW/d. Two cows from each group were maintained on the contaminated feed for 3 weeks, while the other two were given the contaminated feed for 6 weeks. One of the group of four was also administered phenobarbital throughout the experiment. Concentrations of HEOD were detected in milk and body fat. However, the experiments showed that milk was not the major route of excretion for HEOD; rather, the chemical were primary excreted in the feces. It was also noted that the animals administered phenobarbital had lower concentrations of HEOD in milk and fat. The authors suggest that the 50% to 60% of the chemical that was unaccounted for was in the form of hydroxylated metabolites, but no direct evidence was provided.

dieldrin

Experiment Comments: Data provided are an average of 2 cows. The animal weight, feed intake, and chemical intake were calculated from data in tables. Intake was reported as 0.1 mg/kgBW/day. The feed intake was reported as a total over the whole dosing period. During dosing and post-dosing data were added based on Figures 1-4.

Analytical Method: Dieldrin was administered orally in gelatin capsules containing 15 g chromic oxide. Methods used are described in Crosby and Archer (1966) and milk fat isolated by Babcock method.

Animal Data

Animal ID	Days Dosed	Lactation status	Description	Chemical Intake Rate	Feed Concentration	Feed Intake Rate	Weight
1	42	lactating	Holstein	64.8 mg/d	4.10 ppm	15.8 kgDW/d	648 kg
Note: actually represents 2 cows. Animal weight back calculated (2722.6 mg/42days)/(0.1 mg/kg/day)							
2	21	lactating	Holstein	63 mg/d	3.47 ppm	18.2 kgDW/d	631 kg
Note: actually represents 2 cows. Animal weight back calculated (1324.1 mg/21days)/(0.1 mg/kg/day)							

Media Concentrations

Day	Beef fat	Beef tissue	Milk fat	Whole milk
Animal ID 1				
7				58 ppb (From figure 2)
14	1.25 ppm / 10% (From Figure 4. Scapular fat (shoulder).)			110 ppb (From figure 2)
21				108 ppb (From figure 2)
28	1.6 ppm / 10% (From Figure 4. Scapular fat (shoulder).)			115 ppb (From figure 2)
35				155 ppb (From figure 2)

Note: Concentration data includes (concentration in reported units / percent fat).

Wilson and Cook, 1972

Journal of Agricultural and Food Chemistry. 20: 391

Day	Beef fat	Beef tissue	Milk fat	Whole milk
42	2.9 ppm / 10% (Scapular fat (shoulder) from Figure 4.)			125 ppb (from Figure 2)
Animal ID 2				
7				57 ppb (From figure 1)
14	1.8 ppb / 10% (From figure 3. Scapular fat (shoulder).)			85 ppb (From figure 1)
21				130 ppb (From figure 1)
28	1.6 ppm / 10% (From figure 3. Scapular fat (shoulder).)			106 ppb (From figure 1)
35				85 ppb (From figure 1)
42	1.3 ppm / 10% (From figure 3. Scapular fat (shoulder).)			50 ppb (From figure 1)

Note: Concentration data includes (concentration in reported units / percent fat).

Wszolek et al., 1980

Bulletin of Environmental Contamination and Toxicology. 24: 296

Two cows were given fenvalerate for four days in feed. One cow was fed 5 ppm and the other was fed 15 ppm. Concentrations were measured in milk over the four days that dosing took place. Concentrations were also measured for 6 days after the dosing. Concentrations in milk were below detection on the third day after the dosing ended. Concentrations were also measured in feces. Significantly more of the chemical was detected in the feces compared with the milk samples. The authors did not look for metabolites of the chemical but propose that fenvalerate may undergo hydrolysis.

fenvalerate

Experiment Comments: The feed rate is assumed to be dry weight. The chemical dose rate per day was calculated given the total dose and the number of days for the study.

Analytical Method: Fenvalerate was in an acetone solution, which was thoroughly mixed with the evening grain. Concentrations were detemined using gas chromatography. The detection limit was estimated at 10 ppb or 0.01 ppm. Recovery of the chemical from milk was 120% and from feces was 123%.

Animal Data

Animal ID	Days Dosed	Lactation status	Description	Chemical Intake Rate	Feed Concentration	Feed Intake Rate	Weight
1	4	lactating	Holstein	113.5 mg/d	5 ppm	22.7 kgDW/d	
2	4	lactating	Holstein	340.5 mg/d	15 ppm	22.7 kgDW/d	

Media Concentrations

Day	Beef fat	Beef tissue	Milk fat	Whole milk
Animal ID 1				
2				47 ppb (fresh weight)
3				21 ppb (fresh weight)
4				38 ppb
5				48 ppb (fresh weight)
6				21 ppb (fresh weight)
Animal ID 2				
2				37 ppb (fresh weight)
3				144 ppb (fresh weight)
4				192 ppb
5				250 ppb (fresh weight)

Note: Concentration data includes (concentration in reported units / percent fat).

Wszolek et al., 1980

Bulletin of Environmental Contamination and Toxicology. 24: 296

Day	Beef fat	Beef tissue	Milk fat	Whole milk
6				95 ppb (fresh weight)
7				49 ppb (fresh weight)
8				20 ppb (fresh weight)
9				10 ppb (fresh weight)

Note: Concentration data includes (concentration in reported units / percent fat).

Zweig et al., 1961

Journal of Agricultural and Food Chemistry. 9: 481

DDT residues in milk from dairy cows fed low levels of DDT in their daily rations. Noted that Holstein cows gave significantly lower residues than Jersey or Guernsey cows.

DDT

Experiment Comments:

Analytical Method: Pipetted 1% DDT solution in acetone to grain concentrate. Feed concentrations are correct based on a 20 kg/day diet. Used colorimetric and paper chromatographic methods for analysis. Recoveries were 92.5% on average.

Animal Data

Animal ID	Days Dosed	Lactation status	Description	Chemical Intake Rate	Feed Concentration	Feed Intake Rate	Weight
H2	31	lactating	Holstein	20 mg/d	1 ppm	20 kgDW/d	
G1	31	lactating	Guernsey	40 mg/d	2 ppm	20 kgDW/d	
H4	31	lactating	Holstein	60 mg/d	3 ppm	20 kgDW/d	
G2	31	lactating	Guernsey	100 mg/d	5 ppm	20 kgDW/d	
H1	31	lactating	Holstein	10 mg/d	0.5 ppm	20 kgDW/d	
J2	31	lactating	Jersey	20 mg/d	1 ppm	20 kgDW/d	
H3	31	lactating	Holstein	40 mg/d	2 ppm	20 kgDW/d	
J3	31	lactating	Jersey	60 mg/d	3 ppm	20 kgDW/d	
H5	31	lactating	Holstein	100 mg/d	5 ppm	20 kgDW/d	

Media Concentrations

Day	Beef fat	Beef tissue	Milk fat	Whole milk
Animal ID H2				
2				0.01 ppm / 4%
5				0.01 ppm / 4%
7				0.02 ppm / 4%
12				0.01 ppm / 4%
16				0.02 ppm / 4%
19				0.02 ppm / 4%
24				0.01 ppm / 4%

Note: Concentration data includes (concentration in reported units / percent fat).

Zweig et al., 1961

Journal of Agricultural and Food Chemistry. 9: 481

Day	Beef fat	Beef tissue	Milk fat	Whole milk
27				0.02 ppm / 4%
31				0.03 ppm / 4%
33				0.01 ppm / 4%
35				0.01 ppm / 4%
41				0.01 ppm / 4%
43				0.01 ppm / 4%
Animal ID G1				
2				0.01 ppm / 4%
5				0.03 ppm / 4%
7				0.03 ppm / 4%
9				0.04 ppm / 4%
12				0.06 ppm / 4%
16				0.06 ppm / 4%
19				0.05 ppm / 4%
24				0.04 ppm / 4%
27				0.10 ppm / 4%
31				0.05 ppm / 4%
33				0.03 ppm / 4%
35				0.02 ppm / 4%
37				0.05 ppm / 4%
Animal ID H4				
2				0.04 ppm / 4%
5				0.03 ppm / 4%
7				0.08 ppm / 4%
9				0.05 ppm / 4%
12				0.07 ppm / 4%
16				0.09 ppm / 4%
19				0.08 ppm / 4%
24				0.09 ppm / 4%
27				0.1 ppm / 4%
31				0.09 ppm / 4%
33				0.04 ppm / 4%

Note: Concentration data includes (concentration in reported units / percent fat).

Zweig et al., 1961

Journal of Agricultural and Food Chemistry. 9: 481

Day	Beef fat	Beef tissue	Milk fat	Whole milk
35				0.04 ppm / 4%
37				0.01 ppm / 4%
39				0.03 ppm / 4%
41				0.04 ppm / 4%
43				0.03 ppm / 4%
Animal ID G2				
2				0.16 ppm / 4%
5				0.24 ppm / 4%
7				0.32 ppm / 4%
9				0.25 ppm / 4%
12				0.22 ppm / 4%
16				0.25 ppm / 4%
19				0.18 ppm / 4%
24				0.20 ppm / 4%
27				0.31 ppm / 4%
31				0.21 ppm / 4%
33				0.07 ppm / 4%
37				0.05 ppm / 4%
39				0.09 ppm / 4%
41				0.06 ppm / 4%
43				0.04 ppm / 4%
Animal ID H1				
27				0.02 ppm / 4%
31				0.01 ppm / 4%
35				0.01 ppm / 4%
37				0.01 ppm / 4%
Animal ID J2				
7				0.02 ppm / 4%
9				0.01 ppm / 4%
12				0.02 ppm / 4%
19				0.01 ppm / 4%

Note: Concentration data includes (concentration in reported units / percent fat).

Zweig et al., 1961

Journal of Agricultural and Food Chemistry. 9: 481

Day	Beef fat	Beef tissue	Milk fat	Whole milk
24				0.02 ppm / 4%
27				0.03 ppm / 4%
31				0.01 ppm / 4%
33				0.01 ppm / 4%
35				0.02 ppm / 4%
37				0.01 ppm / 4%
41				0.01 ppm / 4%
Animal ID H3				
1				0.01 ppm / 4%
2				0.05 ppm / 4%
5				0.03 ppm / 4%
7				0.01 ppm / 4%
9				0.01 ppm / 4%
12				0.03 ppm / 4%
16				0.04 ppm / 4%
19				0.02 ppm / 4%
24				0.02 ppm / 4%
27				0.05 ppm / 4%
31				0.05 ppm / 4%
33				0.02 ppm / 4%
35				0.01 ppm / 4%
37				0.06 ppm / 4%
43				0.01 ppm / 4%
Animal ID J3				
1				0.01 ppm / 4%
2				0.06 ppm / 4%
5				0.06 ppm / 4%
7				0.12 ppm / 4%
9				0.12 ppm / 4%
12				0.18 ppm / 4%
16				0.15 ppm / 4%
19				0.14 ppm / 4%

Note: Concentration data includes (concentration in reported units / percent fat).

Zweig et al., 1961

Journal of Agricultural and Food Chemistry. 9: 481

Day	Beef fat	Beef tissue	Milk fat	Whole milk
24				0.11 ppm / 4%
27				0.12 ppm / 4%
31				0.06 ppm / 4%
33				0.04 ppm / 4%
35				0.04 ppm / 4%
37				0.02 ppm / 4%
41				0.04 ppm / 4%
Animal ID H5				
2				0.02 ppm / 4%
5				0.02 ppm / 4%
7				0.08 ppm / 4%
9				0.06 ppm / 4%
12				0.07 ppm / 4%
16				0.09 ppm / 4%
19				0.09 ppm / 4%
24				0.10 ppm / 4%
27				0.10 ppm / 4%
31				0.10 ppm / 4%
33				0.02 ppm / 4%
35				0.03 ppm / 4%
41				0.03 ppm / 4%

Note: Concentration data includes (concentration in reported units / percent fat).

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