

Results by Chemical Group

Other Pesticides

N,N-Diethyl-3-methylbenzamide

CAS No. 134-62-3

General Information

N,N-diethyl-3-methylbenzamide (DEET) is an insect repellent that was first marketed in 1957. Commonly used to prevent mosquito bites, DEET can be applied to clothing and the skin. Insect repellents containing DEET are widely used by the general population. Commercial formulations of repellents containing DEET range in concentration from 4% to 100%. DEET is also used in combination with dermal sun screens. There are no registered uses of DEET on agricultural commodities.

The general population may be exposed to DEET from application to the skin and from inhalation of aerosol-repellent formulations. Eating food touched by hands that have been treated with DEET can also result in exposure. Absorption of DEET through the skin is limited, depending on the concentration and the presence of other

chemicals in the formulation. After absorption, DEET is eliminated in the urine within approximately 24 hours (Selim et al., 1995). Bioaccumulation of DEET in the human body does not occur. People working in outdoor occupations may apply DEET more frequently or use higher concentration formulations resulting in higher levels of exposure.

Most reports of adverse effects from overexposure to DEET involve skin reactions (Bell et al., 2002). Neurological effects, including seizures, have been reported in a small number of studies involving human overexposure by ingestion or excessive dermal application, although it is unclear whether these effects have been caused by DEET (U.S. EPA, 1998). The toxicological mechanisms resulting in adverse effects from overexposure to DEET are not well understood. DEET is not rated by IARC or NTP with respect to

Table 310. N,N-Diethyl-3-methylbenzamide (DEET)

Geometric mean and selected percentiles of urine concentrations (in µg/L) for the U.S. population aged 6-59 years, National Health and Nutrition Examination Survey, 1999-2002.

	Survey years	Geometric mean (95% conf. interval)	Selected percentiles (95% confidence interval)				Sample size
			50th	75th	90th	95th	
Total, age 6 and older	99-00	*	< LOD	< LOD	< LOD	< LOD	1977
	01-02	*	< LOD	< LOD	.100 (<LOD-.110)	.170 (.140-.220)	2535
Age group							
6-11 years	99-00	*	< LOD	< LOD	< LOD	< LOD	480
	01-02	*	< LOD	< LOD	.120 (.100-.180)	.200 (.120-.560)	580
12-19 years	99-00	*	< LOD	< LOD	< LOD	< LOD	672
	01-02	*	< LOD	< LOD	.120 (.110-.160)	.220 (.130-.460)	829
20-59 years	99-00	*	< LOD	< LOD	< LOD	< LOD	825
	01-02	*	< LOD	< LOD	.100 (<LOD-.110)	.160 (.120-.210)	1126
Gender							
Males	99-00	*	< LOD	< LOD	< LOD	< LOD	964
	01-02	*	< LOD	< LOD	.100 (<LOD-.110)	.180 (.130-.250)	1191
Females	99-00	*	< LOD	< LOD	< LOD	< LOD	1013
	01-02	*	< LOD	< LOD	.100 (<LOD-.120)	.160 (.120-.200)	1344
Race/ethnicity							
Mexican Americans	99-00	*	< LOD	< LOD	< LOD	< LOD	688
	01-02	*	< LOD	< LOD	.110 (<LOD-.130)	.120 (.100-.150)	678
Non-Hispanic blacks	99-00	*	< LOD	< LOD	< LOD	< LOD	518
	01-02	*	< LOD	< LOD	< LOD	.130 (.100-.230)	700
Non-Hispanic whites	99-00	*	< LOD	< LOD	< LOD	< LOD	598
	01-02	*	< LOD	< LOD	.100 (<LOD-.110)	.170 (.130-.250)	956

< LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample. See Appendix A for LODs.

* Not calculated. Proportion of results below limit of detection was too high to provide a valid result.

carcinogenicity.

Interpreting Levels of Urinary DEET Reported in the Tables

Urinary levels of DEET were measured in a subsample of NHANES participants aged 6-59 years. Participants were selected within the specified age range to be a representative sample of the U.S. population. Urinary levels of DEET were characterized at the 90th and 95th percentiles in this 2001-2002 subsample at an improved limit of detection as compared with the NHANES 1999-2000 subsample for which measurements of DEET were usually not detectable. In a small study by Smallwood et

al. (1992), urinary DEET levels as high as 5,690 µg/L were measured in eight park employees who applied 71% DEET once a day.

Finding a measurable amount of DEET in urine does not mean that the level will result in an adverse health effect. These data will help scientists plan and conduct research about the relation between exposure to DEET and health effects. These data also provide physicians with a reference range so that they can determine whether other people have been exposed to higher levels of DEET than levels found in the general population.

Table 311. N,N-Diethyl-3-methylbenzamide (DEET) (creatinine corrected)

Geometric mean and selected percentiles of urine concentrations (in µg/g of creatinine) for the U.S. population aged 6-59 years, National Health and Nutrition Examination Survey, 1999-2002.

	Survey years	Geometric mean (95% conf. interval)	Selected percentiles (95% confidence interval)				Sample size
			50th	75th	90th	95th	
Total, age 6 and older	99-00	*	< LOD	< LOD	< LOD	< LOD	1977
	01-02	*	< LOD	< LOD	.269 (.233-.300)	.412 (.350-.500)	2534
Age group							
6-11 years	99-00	*	< LOD	< LOD	< LOD	< LOD	480
	01-02	*	< LOD	< LOD	.333 (.219-.608)	.632 (.280-1.93)	580
12-19 years	99-00	*	< LOD	< LOD	< LOD	< LOD	672
	01-02	*	< LOD	< LOD	.190 (.148-.241)	.241 (.175-.333)	828
20-59 years	99-00	*	< LOD	< LOD	< LOD	< LOD	825
	01-02	*	< LOD	< LOD	.267 (.229-.304)	.407 (.368-.500)	1126
Gender							
Males	99-00	*	< LOD	< LOD	< LOD	< LOD	964
	01-02	*	< LOD	< LOD	.194 (.163-.250)	.314 (.250-.440)	1191
Females	99-00	*	< LOD	< LOD	< LOD	< LOD	1013
	01-02	*	< LOD	< LOD	.327 (.292-.368)	.500 (.400-.543)	1343
Race/ethnicity							
Mexican Americans	99-00	*	< LOD	< LOD	< LOD	< LOD	688
	01-02	*	< LOD	< LOD	.185 (.163-.219)	.280 (.226-.350)	678
Non-Hispanic blacks	99-00	*	< LOD	< LOD	< LOD	< LOD	518
	01-02	*	< LOD	< LOD	< LOD	.187 (.140-.269)	699
Non-Hispanic whites	99-00	*	< LOD	< LOD	< LOD	< LOD	598
	01-02	*	< LOD	< LOD	.304 (.259-.333)	.481 (.389-.545)	956

< LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample. See Appendix A for LODs.

* Not calculated. Proportion of results below limit of detection was too high to provide a valid result.

ortho-Phenylphenol

CAS No. 90-43-7

General Information

Ortho-phenylphenol (OPP) and its water-soluble salt, sodium *o*-phenylphenate (SOPP), are antimicrobial pesticides used in agriculture to control fungal and bacterial growth on stored crops, such as fruits and vegetables. These agents came into use in the mid 1930s. SOPP is applied topically to the crop and then rinsed off, leaving the chemical residue, *o*-phenylphenol. OPP offers additional protection to the crop from infection at scarred or injured sites (Johnson et al., 2001). OPP is also used as a disinfectant fungicide for industrial applications and at one time was used for applications inside the home.

The general population may be exposed to these chemicals via dermal, inhalational, or oral routes from residential use and by ingesting treated food or contaminated ground water. OPP has been detected in

carpet dust in residential environments (Immerman and Shaum, 1990). Workers who manufacture, formulate, or apply these chemicals may have higher levels of exposure than other people.

OPP is not effectively absorbed through the skin but is efficiently absorbed from the gastrointestinal tract. Animal studies show that OPP appears to be eliminated rapidly from the body. The major urinary metabolites from SOPP exposure are OPP glucuronide and sulfate conjugates. The available evidence does not suggest that OPP accumulates in the body; however, OPP has been measured in human adipose tissue (Onstot and Stanley, 1989). After dermal exposure, OPP is rapidly eliminated in the urine within 24 hours (Timchalk et al., 1998). IARC has classified SOPP as a possible human carcinogen and OPP as not classifiable as a human carcinogen. The NTP conducted a 2-year experimental

Table 312. ortho-Phenylphenol

Geometric mean and selected percentiles of urine concentrations (in µg/L) for the U.S. population aged 6-59 years, National Health and Nutrition Examination Survey, 1999-2002.

	Survey years	Geometric mean (95% conf. interval)	Selected percentiles (95% confidence interval)				Sample size
			50th	75th	90th	95th	
Total, age 6 and older	99-00	.494 (.387-.630)	.490 (<LOD-.600)	.850 (.600-1.30)	1.46 (1.01-1.90)	2.00 (1.50-2.80)	1991
	01-02	*	< LOD	< LOD	.570 (.360-.830)	1.27 (.710-2.85)	2529
Age group							
6-11 years	99-00	.507 (.399-.643)	.490 (<LOD-.630)	.890 (.610-1.50)	1.80 (1.30-2.10)	2.20 (1.80-3.90)	480
	01-02	*	< LOD	< LOD	1.17 (.730-2.02)	2.28 (1.28-3.61)	577
12-19 years	99-00	.506 (.369-.695)	.490 (<LOD-.660)	.890 (.570-1.50)	1.60 (1.10-2.10)	2.00 (1.40-6.30)	681
	01-02	*	< LOD	< LOD	.740 (.470-1.25)	2.05 (.800-3.09)	827
20-59 years	99-00	.490 (.385-.623)	.490 (<LOD-.600)	.810 (.600-1.20)	1.41 (1.10-1.80)	1.90 (1.50-2.90)	830
	01-02	*	< LOD	< LOD	.440 (<LOD-.670)	.930 (.540-2.23)	1125
Gender							
Males	99-00	.495 (.386-.635)	.460 (<LOD-.600)	.820 (.600-1.30)	1.60 (1.20-1.90)	1.90 (1.50-3.20)	973
	01-02	*	< LOD	< LOD	.610 (.350-1.03)	1.27 (.750-2.85)	1190
Females	99-00	.493 (.383-.634)	.480 (<LOD-.590)	.860 (.580-1.30)	1.50 (1.00-2.00)	2.10 (1.50-4.50)	1018
	01-02	*	< LOD	< LOD	.520 (.370-.780)	1.22 (.590-2.91)	1339
Race/ethnicity							
Mexican Americans	99-00	.548 (.360-.834)	.410 (<LOD-.950)	1.10 (.490-1.90)	2.20 (1.40-4.80)	3.80 (2.30-7.10)	695
	01-02	*	< LOD	< LOD	1.11 (<LOD-3.88)	2.92 (.560-8.22)	680
Non-Hispanic blacks	99-00	.564 (.428-.742)	.560 (.410-.780)	.970 (.690-1.50)	1.60 (1.30-1.70)	1.90 (1.60-2.20)	520
	01-02	*	< LOD	< LOD	.770 (.570-.890)	1.19 (.840-1.76)	695
Non-Hispanic whites	99-00	.463 (.347-.619)	.440 (<LOD-.600)	.770 (.550-1.20)	1.40 (.860-1.90)	1.80 (1.40-5.10)	603
	01-02	*	< LOD	< LOD	.430 (<LOD-.710)	1.07 (.570-2.23)	953

< LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample. See Appendix A for LODs.

* Not calculated. Proportion of results below limit of detection was too high to provide a valid result.

dermal study in animals using OPP and found no evidence of carcinogenicity.

Interpreting Levels of Urinary *ortho*-Phenylphenol Reported in the Tables

Urinary OPP levels were measured in a subsample of NHANES participants aged 6-59 years. Participants were selected within the specified age range to be a representative sample of the U.S. population. Levels in this *Report* are less than levels measured following experimental dermal application in humans (Timchalk et al., 1998).

Comparing Adjusted Geometric Means

Geometric mean levels of urinary OPP could not be calculated for the 2001-2002 subsample due to an insufficient detection rate. Geometric mean levels in the demographic groups for the previous 1999-2000 subsample were compared after adjustment for the covariates of age, race/ethnicity, gender and urinary

creatinine. No differences between the demographic groups were observed.

Finding a measurable amount of OPP in urine does not mean that the level of the OPP will result in an adverse health effect. These data will help scientists plan and conduct research about exposure to OPP and health effects. These data also provide physicians with a reference range so that they can determine whether other people have been exposed to higher levels of OPP than levels found in the general population.

Table 313. *ortho*-Phenylphenol (creatinine corrected)

Geometric mean and selected percentiles of urine concentrations (in $\mu\text{g/g}$ of creatinine) for the U.S. population aged 6-59 years, National Health and Nutrition Examination Survey, 1999-2002.

	Survey years	Geometric mean (95% conf. interval)	Selected percentiles (95% confidence interval)				Sample size
			50th	75th	90th	95th	
Total, age 6 and older	99-00	.442 (.351-.556)	.413 (.313-.554)	.840 (.619-1.11)	1.84 (1.24-2.33)	2.93 (2.04-4.29)	1991
	01-02	*	< LOD	< LOD	.982 (.808-1.17)	1.75 (1.21-2.33)	2528
Age group							
6-11 years	99-00	.547 (.452-.663)	.504 (.402-.667)	1.02 (.800-1.27)	1.96 (1.43-2.59)	2.61 (2.09-3.58)	480
	01-02	*	< LOD	< LOD	1.91 (1.08-2.53)	2.53 (1.96-4.01)	577
12-19 years	99-00	.342 (.247-.472)	.319 (.198-.497)	.691 (.460-.913)	1.14 (.867-1.96)	1.96 (1.09-6.32)	681
	01-02	*	< LOD	< LOD	.750 (.643-1.21)	1.52 (.937-2.32)	826
20-59 years	99-00	.450 (.358-.566)	.420 (.313-.562)	.861 (.618-1.12)	1.89 (1.24-2.47)	3.28 (2.06-4.93)	830
	01-02	*	< LOD	< LOD	.913 (.778-1.05)	1.44 (1.05-2.30)	1125
Gender							
Males	99-00	.380 (.299-.482)	.353 (.239-.471)	.752 (.548-.994)	1.43 (1.08-1.93)	2.07 (1.51-3.29)	973
	01-02	*	< LOD	< LOD	.750 (.583-1.11)	1.61 (.750-2.43)	1190
Females	99-00	.512 (.400-.654)	.459 (.382-.588)	.909 (.646-1.46)	2.04 (1.37-3.28)	3.78 (2.06-5.96)	1018
	01-02	*	< LOD	< LOD	1.11 (.913-1.35)	1.75 (1.25-2.30)	1338
Race/ethnicity							
Mexican Americans	99-00	.493 (.307-.789)	.420 (.221-.808)	1.11 (.548-2.14)	2.99 (1.25-6.08)	4.61 (2.40-13.4)	695
	01-02	*	< LOD	< LOD	1.28 (.525-4.26)	3.00 (.778-14.0)	680
Non-Hispanic blacks	99-00	.382 (.287-.509)	.375 (.259-.549)	.672 (.509-.897)	1.21 (.897-1.62)	1.69 (1.43-2.13)	520
	01-02	*	< LOD	< LOD	.669 (.477-.966)	1.16 (.739-2.12)	694
Non-Hispanic whites	99-00	.438 (.326-.588)	.410 (.280-.608)	.861 (.595-1.20)	1.86 (1.12-2.59)	2.93 (1.88-4.81)	603
	01-02	*	< LOD	< LOD	.982 (.808-1.11)	1.52 (1.11-1.91)	953

< LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample. See Appendix A for LODs.

* Not calculated. Proportion of results below limit of detection was too high to provide a valid result.

2,5-Dichlorophenol

CAS No. 583-78-8

Metabolite of *para*-Dichlorobenzene, CAS No. 106-47-7

General Information

The chemical 2,5-dichlorophenol is a metabolite of *para*-dichlorobenzene (*p*-dichlorobenzene), which is used in moth balls, some room deodorizers, and previously as an insecticidal fumigant. *Para*-dichlorobenzene can be absorbed through oral, dermal, or pulmonary exposure. Absorbed *p*-dichlorobenzene can be excreted unchanged in the urine. Once metabolized in the body to 2,5-dichlorophenol, it is conjugated to glutathione and excreted in the urine.

Eye and respiratory irritation may occur at air levels higher than levels encountered with normal uses. Liver necrosis has been observed in workers after prolonged heavy applications of *p*-dichlorobenzene (Cotter, 1953).

The NTP considers *p*-dichlorobenzene as possibly carcinogenic to humans, and IARC considers *p*-dichlorobenzene as reasonably anticipated to be a human carcinogen. Information about external exposure (i.e., environmental levels) and health effects is available from the U.S. EPA's IRIS Web site at <http://www.epa.gov/iris> and from ATSDR's Toxicological Profiles at <http://www.atsdr.cdc.gov/toxprofiles>.

Interpreting Levels of Urinary 2,5-Dichlorophenol Reported in the Tables

Urinary levels of 2,5-dichlorophenol were measured in a subsample of NHANES participants aged 6-59 years. Participants were selected within the specified age range to be a representative sample of the U.S. population.

Table 314. 2,5-Dichlorophenol

Geometric mean and selected percentiles of urine concentrations (in µg/L) for the U.S. population aged 6-59 years, National Health and Nutrition Examination Survey, 1999-2002.

	Survey years	Geometric mean (95% conf. interval)	Selected percentiles (95% confidence interval)				Sample size
			50th	75th	90th	95th	
Total, age 6 and older	99-00	6.01 (4.19-8.64)	6.50 (5.00-9.10)	37.8 (24.0-47.0)	144 (88.0-240)	440 (290-620)	1989
	01-02	*	2.04 (<LOD-6.48)	28.8 (20.5-40.2)	194 (115-255)	657 (301-1150)	2502
Age group							
6-11 years	99-00	7.57 (4.62-12.4)	9.00 (4.70-12.0)	46.0 (27.0-90.8)	240 (130-610)	630 (400-750)	480
	01-02	*	1.62 (<LOD-11.5)	34.5 (19.6-107)	265 (151-536)	683 (326-1790)	574
12-19 years	99-00	5.85 (3.80-9.00)	4.80 (4.10-6.80)	32.0 (18.0-45.0)	130 (66.0-280)	382 (150-950)	680
	01-02	*	3.51 (<LOD-12.4)	32.9 (21.6-56.3)	194 (106-323)	733 (389-1140)	820
20-59 years	99-00	5.82 (4.05-8.37)	6.60 (5.30-9.30)	36.7 (24.0-45.0)	130 (86.0-200)	420 (240-590)	829
	01-02	*	1.86 (<LOD-6.09)	27.3 (16.9-42.0)	186 (99.7-281)	641 (256-1190)	1108
Gender							
Males	99-00	6.84 (4.73-9.89)	7.90 (5.70-11.0)	37.0 (21.0-55.0)	150 (88.0-280)	440 (210-550)	970
	01-02	*	2.41 (<LOD-8.94)	31.9 (24.7-44.8)	189 (108-316)	663 (251-1210)	1178
Females	99-00	5.30 (3.34-8.42)	5.40 (3.80-7.90)	37.8 (23.0-46.0)	150 (82.0-260)	490 (250-740)	1019
	01-02	*	1.41 (<LOD-5.78)	24.6 (14.6-40.8)	194 (95.5-278)	624 (256-1320)	1324
Race/ethnicity							
Mexican Americans	99-00	14.3 (5.24-38.8)	13.0 (7.90-26.0)	110 (24.0-500)	660 (210-1200)	1100 (510-2800)	695
	01-02	*	12.7 (5.02-27.3)	97.7 (53.2-195)	532 (300-1040)	1550 (641-2980)	677
Non-Hispanic blacks	99-00	15.8 (9.92-25.2)	19.0 (11.0-29.0)	110 (61.0-160)	460 (290-620)	770 (470-1200)	517
	01-02	*	31.5 (24.2-40.2)	242 (145-404)	1210 (774-1680)	2520 (1600-4500)	696
Non-Hispanic whites	99-00	3.81 (2.38-6.09)	4.40 (3.00-5.80)	19.0 (13.0-24.0)	75.0 (55.0-100)	170 (120-320)	603
	01-02	*	< LOD	15.2 (7.54-25.1)	67.9 (40.8-103)	194 (109-289)	930

< LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample. See Appendix A for LODs.

* Not calculated. Proportion of results below limit of detection was too high to provide a valid result.

Levels of 2,5-dichlorophenol in a nonrandom subsample of NHANES III (1988-1994) participants were 5-15 times higher than the levels published in this *Report* (Hill et al., 1995). In the 1999 German Environmental Survey for people aged 16-69 years, median 2,5-dichlorophenol levels were similar to the median in the 2001-2002 subsample, but the 90th percentile was 17-fold lower than the NHANES 2001-2002 value, possibly indicating a wider range of exposures in the United States. Urinary levels of 2,5-dichlorophenol have been shown to correlate with environmental air-exposure levels in a convenience sample of Japanese citizens (Yoshida et al., 2002).

Worker exposure to p-dichlorobenzene has resulted in urinary 2,5-dichlorophenol levels that are much higher than levels in either of the two NHANES subsamples. At a mean air concentration of 25 parts per million (ppm), the corresponding urinary level of 2,5-dichlorophenol was 50 mg (50,000 µg)/gram of creatinine (Pagnotto and Walkley, 1965).

Comparing Adjusted Geometric Means

Geometric mean levels of urinary 2,5-dichlorophenol could not be calculated on the 2001-2002 subsample due to an insufficient detection rate. Geometric mean levels of 2,5-dichlorophenol for the demographic groups in the 1999-2000 subsample were compared after adjusting for the covariates of race/ethnicity, age, gender, and urinary creatinine (data not shown). The group aged 6-11 years had higher adjusted geometric mean levels of urinary 2,5-dichlorophenol than the group aged 12-19 years. Non-Hispanic whites had lower levels than either non-Hispanic blacks or Mexican Americans. It is unknown whether these differences associated with age or race/ethnicity represent differences in exposure, pharmacokinetics, or the relationship of dose per body weight.

Finding a measurable amount of 2,5-dichlorophenol in urine does not mean that the level will result in an adverse health effect. These data will help scientists plan

Table 315. 2,5-Dichlorophenol (creatinine corrected)

Geometric mean and selected percentiles of urine concentrations (in µg/g of creatinine) for the U.S. population aged 6-59 years, National Health and Nutrition Examination Survey, 1999-2002.

	Survey years	Geometric mean (95% conf. interval)	Selected percentiles (95% confidence interval)				Sample size
			50th	75th	90th	95th	
Total, age 6 and older	99-00	5.38 (3.76-7.68)	5.60 (4.30-7.54)	26.0 (19.6-34.5)	125 (72.8-213)	299 (238-426)	1989
	01-02	*	1.56 (.333-5.00)	23.9 (15.9-31.8)	133 (97.0-238)	527 (268-860)	2501
Age group							
6-11 years	99-00	8.17 (4.79-13.9)	11.3 (6.00-16.4)	47.7 (29.4-78.0)	247 (100-458)	516 (267-762)	480
	01-02	*	2.00 (.250-11.4)	38.9 (20.6-100)	248 (150-508)	729 (361-1880)	574
12-19 years	99-00	3.95 (2.50-6.24)	4.11 (2.60-5.72)	19.4 (12.1-30.0)	64.7 (46.9-211)	233 (112-424)	680
	01-02	*	1.92 (.146-6.69)	25.6 (14.6-35.7)	132 (81.0-256)	541 (280-631)	819
20-59 years	99-00	5.36 (3.82-7.52)	5.60 (4.30-7.55)	24.5 (18.4-32.9)	115 (69.0-179)	280 (216-482)	829
	01-02	*	1.38 (.365-4.47)	20.8 (12.9-33.0)	120 (82.5-238)	514 (207-915)	1108
Gender							
Males	99-00	5.25 (3.66-7.55)	5.44 (4.11-7.34)	24.1 (14.9-32.9)	96.8 (65.9-208)	289 (225-394)	970
	01-02	*	1.99 (.280-5.84)	24.0 (15.8-33.2)	128 (88.5-207)	500 (248-783)	1178
Females	99-00	5.50 (3.52-8.61)	6.15 (4.10-9.38)	28.9 (20.1-43.2)	136 (72.8-216)	352 (228-509)	1019
	01-02	*	1.10 (.333-4.45)	23.9 (14.7-34.5)	136 (88.8-291)	589 (262-1050)	1323
Race/ethnicity							
Mexican Americans	99-00	12.9 (4.92-33.7)	12.7 (6.36-30.2)	72.7 (26.6-337)	515 (134-1270)	1170 (516-2810)	695
	01-02	*	9.92 (4.16-21.3)	82.2 (40.1-150)	475 (225-1190)	1500 (715-2170)	677
Non-Hispanic blacks	99-00	10.7 (6.92-16.7)	13.5 (7.65-22.5)	57.8 (38.5-92.1)	241 (138-311)	433 (245-746)	517
	01-02	*	20.6 (13.8-28.7)	137 (84.2-248)	829 (563-1210)	2030 (1100-2650)	695
Non-Hispanic whites	99-00	3.60 (2.27-5.71)	3.81 (2.64-5.22)	14.4 (11.5-18.9)	57.4 (44.1-97.4)	202 (97.4-299)	603
	01-02	*	< LOD	11.7 (5.84-20.7)	50.3 (35.0-88.5)	131 (101-248)	930

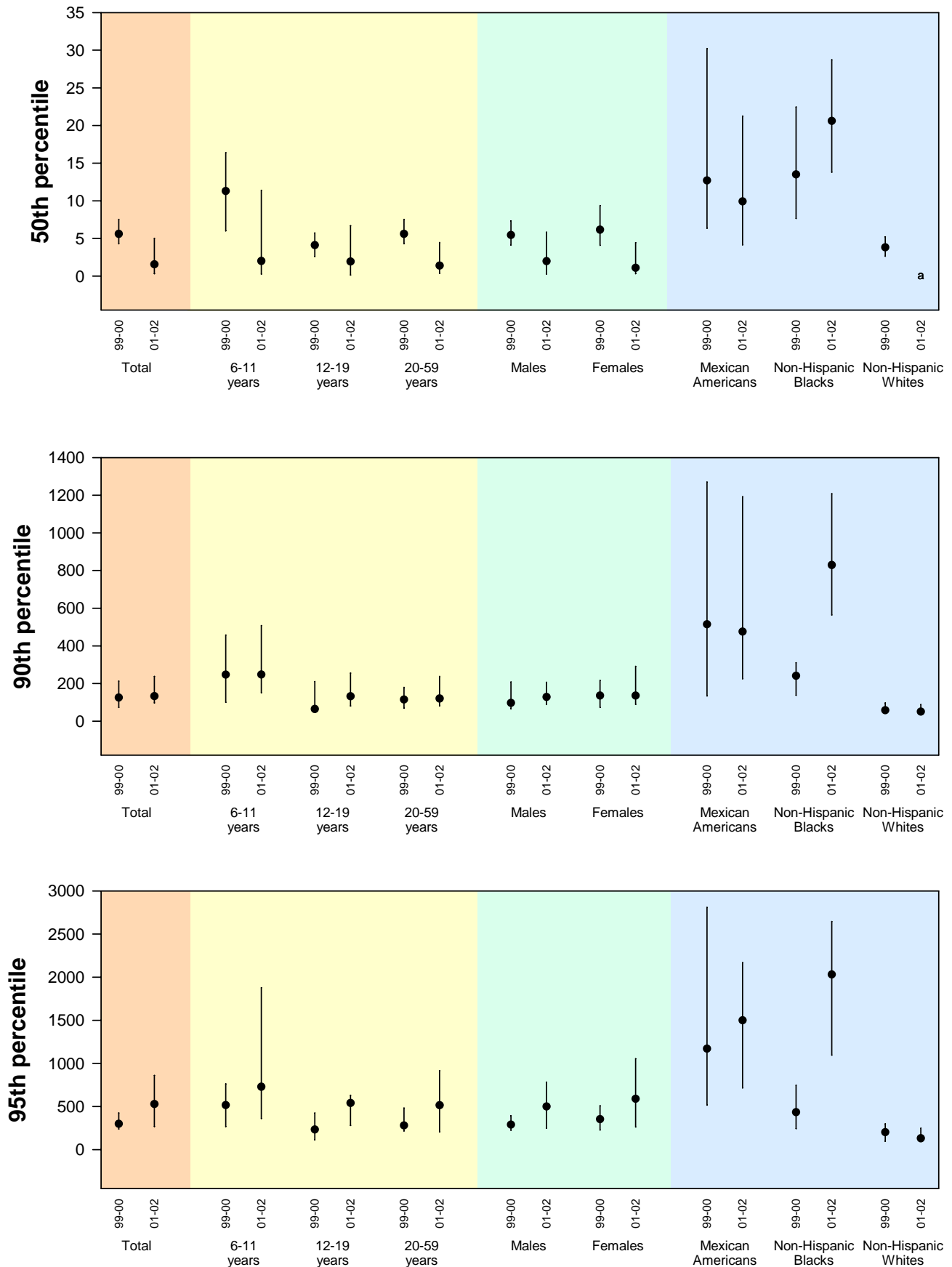
< LOD means less than the limit of detection, which may vary for some chemicals by year and by individual sample. See Appendix A for LODs.

* Not calculated. Proportion of results below limit of detection was too high to provide a valid result.

and conduct research about the relation between exposure to *p*-dichlorobenzene and health effects. These data also provide physicians with a reference range so that they can determine whether or not other people have been exposed to higher levels of *p*-dichlorobenzene than those levels found in the general population.

Figure 38. 2,5-Dichlorophenol (creatinine corrected)

Geometric mean and selected percentiles of urine concentrations (in $\mu\text{g/g}$ of creatinine) for the U.S. population aged 6-59 years, National Health and Nutrition Examination Survey, 1999-2002.



^a Estimate is less than the limit of detection (LOD). See Appendix A for LODs.

Results by Chemical Group

Carbamate Insecticides

