

FIGURE 1. TNT ON NLM TOXNET

1 - RTECS
RTECS RECORD NUMBER 84869
LAST REVISION DATE 9607
UPDATE HISTORY 10/18/96, 6 fields
UPDATE HISTORY 08/21/96, 6 fields
UPDATE HISTORY 06/06/96, 2 fields
UPDATE HISTORY 02/07/96, 3 fields
UPDATE HISTORY 11/15/95, 2 fields
UPDATE HISTORY 08/18/95, 3 fields
RECORD LENGTH 6580
RTECS ACCESSION NUMBER NIOSH/XU0175000
NAME OF SUBSTANCE Toluene, 2,4,6-trinitro-
CAS REGISTRY NUMBER 118-96-7
SYNONYMS Benzene, 2-methyl-1,3,5-trinitro-
SYNONYMS Entsufo
SYNONYMS 2-Methyl-1,3,5-trinitrobenzene
SYNONYMS NCI-C56155
SYNONYMS TNT
SYNONYMS alpha-Tnt
SYNONYMS TNT (OSHA)
SYNONYMS TNT, dry or wetted with <30% water, by weight (UN02
SYNONYMS TNT-tolite (French)
SYNONYMS Tolit
SYNONYMS Tolite
SYNONYMS 2,4,6-Trinitrotolueen (Dutch)
SYNONYMS Trinitrotoluene
SYNONYMS Trinitrotoluene (UN0209) (DOT)
SYNONYMS Trinitrotoluene, wetted with not <30% water, by wei
SYNONYMS s-Trinitrotoluene
SYNONYMS sym-Trinitrotoluene
SYNONYMS 2,4,6-Trinitrotoluene (ACGIH:OSHA)
SYNONYMS s-Trinitrotoluol
SYNONYMS sym-Trinitrotoluol
SYNONYMS 2,4,6-Trinitrotoluol (German)
SYNONYMS Tritol
SYNONYMS Triton
SYNONYMS Trojnitrotoluen (Polish)
SYNONYMS Trotyl
SYNONYMS Trotyl oil
SYNONYMS UN0209 (DOT)
SYNONYMS UN1356 (DOT)
MOLECULAR FORMULA C7-H5-N3-O6
MOLECULAR WEIGHT 227.15
CLASSIFICATION CODE Agricultural Chemical
CLASSIFICATION CODE Tumor data
CLASSIFICATION CODE Mutation data
CLASSIFICATION CODE Reproductive Effect
CLASSIFICATION CODE Human Data
CLASSIFICATION CODE Skin/Eye Irritant
CLASSIFICATION CODE Unspecified/Unclassified pesticide
WISWESSER LINE NOTATION WNR B1 CNW ENW
DATA TYPE Mutagenicity
DATA TYPE Skin/Eye Irritation
DATA TYPE General Toxicity
DATA TYPE Reproductive Studies
DATA TYPE Multiple Dose Studies
MUTAGENICITY STUDIES
o TEST SYSTEM : mutation in microorganisms
o SPECIES/ROUTE/ CELL TYPE : S. typhimurium

FIGURE 1. TNT ON NLM TOXNET (continued)

- o DOSE : 10 ug/plate (+/-S9)
- o REFERENCE : Natl Tech Inf Serv[AD-A080-146] (NTIS**)
- MUTAGENICITY STUDIES**
- o TEST SYSTEM : body fluid assay
- o SPECIES/ROUTE/ CELL TYPE : rat/S. typhimurium
- o DOSE : 50 mg/kg
- o REFERENCE : Mutat Res, vol 262, pg 167, 1991 (MUREAV)
- MUTAGENICITY STUDIES**
- o TEST SYSTEM : gene mutation in mammalian cells
- o SPECIES/ROUTE/ CELL TYPE : mouse:lymphocyte
- o DOSE : 40 mg/L
- o REFERENCE : Cancer Lett, vol 20, pg 103, 1983 (CALEDQ)
- SKIN AND EYE IRRITATION STUDIES**
- o ROUTE : skin
- o SPECIES : rabbit
- o DOSE : 500 mg/24H
- o EFFECT : MILD
- o REFERENCE : Natl Tech Inf Serv[AD-B011-150] (NTIS**)
- GENERAL TOXICITY STUDIES**
- o ROUTE : oral
- o SPECIES : human
- o STUDY TYPE : LDLo
- o DOSE : 28 gm/kg
- o EFFECT : BEHAVIORAL (Hallucinations, distorted percept
- o EFFECT : LUNGS, THORAX OR RESPIRATION (Cyanosis)
- o EFFECT : GASTROINTESTINAL (Other changes)
- o REFERENCE : Toxicol Drugs Chem 1969, pg 610, 1969 (34ZIAG)
- GENERAL TOXICITY STUDIES**
- o ROUTE : oral
- o SPECIES : rat
- o STUDY TYPE : LD50
- o DOSE : 795 mg/kg
- o EFFECT : BEHAVIORAL (Somnolence; Tremor; Convulsions o threshold)
- o REFERENCE : J Toxicol Environ Health, vol 9, pg 565, 1982
- GENERAL TOXICITY STUDIES**
- o ROUTE : oral
- o SPECIES : mouse
- o STUDY TYPE : LD50
- o DOSE : 660 mg/kg
- o EFFECT : BEHAVIORAL (Somnolence; Tremor; Convulsions o threshold)
- o REFERENCE : J Toxicol Environ Health, vol 9, pg 565, 1982
- GENERAL TOXICITY STUDIES**
- o ROUTE : oral
- o SPECIES : cat
- o STUDY TYPE : LDLo
- o DOSE : 1850 mg/kg
- o EFFECT : LUNGS, THORAX OR RESPIRATION (Dyspnea; Cyanos
- o EFFECT : SKIN AND APPENDAGES (After systemic exposure: allergic)
- o REFERENCE : Med Res Counc Spec Rep Ser, vol 58, pg 32, 19
- GENERAL TOXICITY STUDIES**
- o ROUTE : subcutaneous
- o SPECIES : cat
- o STUDY TYPE : LDLo
- o DOSE : 200 mg/kg
- o EFFECT : LUNGS, THORAX OR RESPIRATION (Dyspnea; Cyanos
- o EFFECT : SKIN AND APPENDAGES (After systemic exposure: allergic)
- o REFERENCE : Med Res Counc Spec Rep Ser, vol 58, pg 32, 19

FIGURE 1. TNT ON NLM TOXNET (continued)

GENERAL TOXICITY STUDIES

o ROUTE : oral
 o SPECIES : rabbit
 o STUDY TYPE : LDLo
 o DOSE : 500 mg/kg
 o EFFECT : BEHAVIORAL (Convulsions or effect on seizure)
 o EFFECT : GASTROINTESTINAL (Hypermotility, diarrhea)
 o EFFECT : LUNGS, THORAX OR RESPIRATION (Cyanosis)
 o REFERENCE : Med Res Counc Spec Rep Ser, vol 58, pg 32, 19

GENERAL TOXICITY STUDIES

o ROUTE : subcutaneous
 o SPECIES : rabbit
 o STUDY TYPE : LDLo
 o DOSE : 500 mg/kg
 o EFFECT : BEHAVIORAL (Convulsions or effect on seizure)
 o EFFECT : GASTROINTESTINAL (Hypermotility, diarrhea)
 o EFFECT : LUNGS, THORAX OR RESPIRATION (Cyanosis)
 o REFERENCE : Med Res Counc Spec Rep Ser, vol 58, pg 32, 19

REPRODUCTIVE STUDIES

o ROUTE : oral
 o SPECIES : rat
 o STUDY TYPE : TDLo
 o DOSE : 5376 mg/kg (28D male)
 o EFFECT : PATERNAL EFFECTS (Testes, epididymis, sperm d
 o REFERENCE : J Toxicol Environ Health, vol 9, pg 565, 1982

MULTIPLE DOSE TOXICITY STUDIES

o ROUTE : oral
 o SPECIES : rat
 o STUDY TYPE : TDLo
 o DOSE : 7200 mg/kg/6W-I
 o EFFECT : LIVER (Other changes)
 o EFFECT : BLOOD (Changes in serum composition TP, bilir
 cholesterol...)
 o EFFECT : OTHER MULTIPLE DOSE TOXICITY DATA (Changes in
 o REFERENCE : Toxicol Lett, vol 55, pg 343, 1991 (TOLED5)

MULTIPLE DOSE TOXICITY STUDIES

o ROUTE : oral
 o SPECIES : rat
 o STUDY TYPE : TDLo
 o DOSE : 11375 mg/kg/13W-C
 o EFFECT : BEHAVIORAL (Food intake)
 o EFFECT : BLOOD (Normocytic anemia)
 o EFFECT : NUTRITIONAL AND GROSS METABOLIC (Weight loss
 gain)
 o REFERENCE : Toxicology, vol 32, pg 253, 1984 (TXCYAC)

MULTIPLE DOSE TOXICITY STUDIES

o ROUTE : oral
 o SPECIES : rat
 o STUDY TYPE : TDLo
 o DOSE : 3 gm/kg/30D-I
 o EFFECT : LIVER (Other changes)
 o EFFECT : BIOCHEMICAL EFFECTS (Monoamine oxidase; Lipid
 transport)
 o REFERENCE : Gig Tr Prof Zabol, vol 18(10), pg 57, 1974 (G

MULTIPLE DOSE TOXICITY STUDIES

o ROUTE : oral
 o SPECIES : mouse
 o STUDY TYPE : TDLo
 o DOSE : 11 mg/kg/13W-C
 o EFFECT : LIVER (Changes in liver weight)
 o EFFECT : ENDOCRINE (Changes in spleen weight)

FIGURE 1. TNT ON NLM TOXNET (continued)

o EFFECT : BLOOD (Changes in spleen)
o REFERENCE : J Toxicol Environ Health, vol 9, pg 565, 1982
MULTIPLE DOSE TOXICITY STUDIES
o ROUTE : oral
o SPECIES : dog
o STUDY TYPE : TDLo
o DOSE : 182 mg/kg/13W-C
o EFFECT : LIVER (Changes in liver weight)
o EFFECT : BLOOD (Normocytic anemia)
o EFFECT : NUTRITIONAL AND GROSS METABOLIC (Weight loss gain)
o REFERENCE : J Toxicol Environ Health, vol 9, pg 565, 1982
MULTIPLE DOSE TOXICITY STUDIES
o ROUTE : oral
o SPECIES : dog
o STUDY TYPE : TDLo
o DOSE : 1456 mg/kg/26W-I
o EFFECT : LIVER (Changes in liver weight)
o EFFECT : BLOOD (Normocytic anemia; Changes in spleen)
o REFERENCE : Toxicology, vol 63, pg 233, 1990 (TXCYAC)
TOXICOLOGY REVIEW TOXICOLOGY REVIEW; NTIS[™] AD778-725; Natl Tech Inf
TOXICOLOGY REVIEW TOXICOLOGY REVIEW; CRTXB2 1(1),93,71; CRC Crit Rev
TOXICOLOGY REVIEW TOXICOLOGY REVIEW; PAREAQ 4,1,52; Pharmacol Rev
CANCER REVIEW IARC CANCER REVIEW; Animal Inadequate Evidence; IME
Monogr Eval Carcinog Risk Chem Man
CANCER REVIEW IARC CANCER REVIEW; Human Inadequate Evidence; IMEM
Monogr Eval Carcinog Risk Chem Man
CANCER REVIEW IARC CANCER REVIEW; Group 3; IMEMDT 65,449,96; IARC
Carcinog Risk Chem Man
THRESHOLD LIMIT VALUE ACGIH THRESHOLD LIMIT VALUE REVIEW; TWA 0.5 mg/m3 (6,1652,91; Doc Threshold Limit Values
NIOSH RECOMMENDED LIMITS NIOSH REL TO 2,4,6-TRINITROTOLUENE-air:10H TWA 0.5
DHHS #92-100,92; Natl Inst Occup Saf Health
NIOSH EXPOSURE SURVEYS NATIONAL OCCUPATIONAL EXPOSURE SURVEY 1983: Hazard#
industries: 2; total number of facilities: 10; numb
1; total number of employees: 31
STANDARDS AND REGULATIONS DOT-HAZARD:EXPLOSIVE 1.1D; LABEL:EXPLOSIVE 1.1D (UN
49,172.101,92; Code Fed Regul
STANDARDS AND REGULATIONS DOT-HAZARD:4.1; LABEL:FLAMMABLE SOLID (UN1356); CFR
Code Fed Regul
STANDARDS AND REGULATIONS MSHA STANDARD-air:TWA 0.2 ppm (0.5 mg/m3) (skin); D
Threshold Limit Values
STANDARDS AND REGULATIONS OSHA PEL (Gen Indu):8H TWA 1.50 mg/m3 (skin); CFRGB
Code Fed Regul
STANDARDS AND REGULATIONS OSHA PEL (Construc):8H TWA 1.50 mg/m3 (skin); CFRGB
Code Fed Regul
STANDARDS AND REGULATIONS OSHA PEL (Shipyard):8H TWA 1.50 mg/m3 (skin); CFRGB
Code Fed Regul
STANDARDS AND REGULATIONS OSHA PEL (Fed Cont):8H TWA 1.50 mg/m3 (skin); CFRGB
Code Fed Regul
STANDARDS AND REGULATIONS OEL-ARAB Republic of Egypt:TWA 0.5 mg/m3 JAN93
STANDARDS AND REGULATIONS OEL-AUSTRALIA:TWA 0.5 mg/m3;Skin JAN93
STANDARDS AND REGULATIONS OEL-BELGIUM:TWA 0.5 mg/m3;Skin JAN93
STANDARDS AND REGULATIONS OEL-DENMARK:STEL 0.5 mg/m3;Skin JAN93
STANDARDS AND REGULATIONS OEL-FINLAND:TWA 0.5 mg/m3;STEL 3 mg/m3;Skin JAN93
STANDARDS AND REGULATIONS OEL-FRANCE:TWA 0.5 mg/m3;Skin JAN93
STANDARDS AND REGULATIONS OEL-GERMANY:TWA 0.01 ppm (0.1 mg/m3);Skin;Carcinoge
STANDARDS AND REGULATIONS OEL-HUNGARY:TWA 0.3 mg/m3;STEL 0.5 mg/m3;Skin JAN93
STANDARDS AND REGULATIONS OEL-THE NETHERLANDS:TWA 0.5 mg/m3;Skin JAN93
STANDARDS AND REGULATIONS OEL-THE PHILIPPINES:TWA 1.5 mg/m3;Skin JAN93
STANDARDS AND REGULATIONS OEL-RUSSIA:TWA 0.1 mg/m3;STEL 0.5 mg/m3;Skin JAN93

FIGURE 1. TNT ON NLM TOXNET (continued)

STANDARDS AND REGULATIONS	OEL-SWITZERLAND:TWA 0.01 ppm (0.1 mg/m3);STEL 0.02
STANDARDS AND REGULATIONS	OEL-TURKEY:TWA 1.5 mg/m3;Skin JAN93
STANDARDS AND REGULATIONS	OEL-UNITED KINGDOM:TWA 0.5 mg/m3;STEL 0.5 mg/m3 JAN
STANDARDS AND REGULATIONS	OEL IN BULGARIA, COLOMBIA, JORDAN, KOREA check ACGI
STANDARDS AND REGULATIONS	OEL IN NEW ZEALAND, SINGAPORE, VIETNAM check ACGIH
FEDERAL PROGRAM STATUS	EPA GENETOX PROGRAM 1988, Positive: Histidine rever
FEDERAL PROGRAM STATUS	EPA TSCA Section 8(b) CHEMICAL INVENTORY
FEDERAL PROGRAM STATUS	EPA TSCA Section 8(d) unpublished health/safety stu
FEDERAL PROGRAM STATUS	On EPA IRIS database
FEDERAL PROGRAM STATUS	EPA TSCA TEST SUBMISSION (TSCATS) DATA BASE, JULY 1
FEDERAL PROGRAM STATUS	OSHA ANALYTICAL METHOD #44

[RTECS] SS 2 /cf?

USER:

FIGURE 2. 2,4-D NLM TOXNET

1 - RTECS
 RTECS RECORD NUMBER 2099
 LAST REVISION DATE 9607
 UPDATE HISTORY 08/21/96, 4 fields
 UPDATE HISTORY 06/04/96, 3 fields
 UPDATE HISTORY 02/07/96, 4 fields
 UPDATE HISTORY 11/09/95, 5 fields
 UPDATE HISTORY 08/02/95, 4 fields
 RECORD LENGTH 13528
 RTECS ACCESSION NUMBER NIOSH/AG6825000
 NAME OF SUBSTANCE Acetic acid, (2,4-dichlorophenoxy)-
 CAS REGISTRY NUMBER 94-75-7
 SYNONYMS Acide 2,4-dichloro phenoxyacetique (French)
 SYNONYMS Acido(2,4-dicloro-fenossi)-acetico (Italian)
 SYNONYMS Acme amine 4
 SYNONYMS Acme butyl ester 4
 SYNONYMS Acme LV 4
 SYNONYMS Agrotect
 SYNONYMS Amidox
 SYNONYMS Amoxone
 SYNONYMS Aqua-Kleen
 SYNONYMS Barrage
 SYNONYMS BH 2,4-D
 SYNONYMS Brush-rhap
 SYNONYMS B-Selektionon
 SYNONYMS Chipco turf herbicide "D"
 SYNONYMS Chloroxone
 SYNONYMS Citrus fix
 SYNONYMS Crop rider
 SYNONYMS 2,4-D (ACGIH:OSHA)
 SYNONYMS 2,4-D acid
 SYNONYMS Debroussaillant 600
 SYNONYMS Decamine
 SYNONYMS Deherban
 SYNONYMS (2,4-Dichloor-fenoxy)-azijnzuur (Dutch)
 SYNONYMS Dichlorophenoxyacetic acid
 SYNONYMS 2,4-Dichlorophenoxyacetic acid
 SYNONYMS Dichlorophenoxyacetic acid (OSHA)
 SYNONYMS 2,4-Dichlorophenoxyacetic acid
 SYNONYMS (2,4-Dichlor-phenoxy)-essigsaeure (German)
 SYNONYMS Dicopur
 SYNONYMS DMA-4
 SYNONYMS Dormone
 SYNONYMS 2,4-Dwuchlorofenoksyoctowy kwas (Polish)
 SYNONYMS Emulsamine BK
 SYNONYMS Emulsamine E-3
 SYNONYMS ENT 8,538
 SYNONYMS Envert 171
 SYNONYMS Envert DT
 SYNONYMS Estone
 SYNONYMS Farmco
 SYNONYMS Femimine
 SYNONYMS Femoxone
 SYNONYMS Ferxone
 SYNONYMS Foredex 75
 SYNONYMS Hedonal
 SYNONYMS Hedonal (the herbicide)
 SYNONYMS Herbidal
 SYNONYMS Hivol-44

FIGURE 2. 2,4-D NLM TOXNET (continued)

SYNONYMS Ipaner
 SYNONYMS Kwasu 2,4-dwuchlorofenoksyoctowego (Polish)
 SYNONYMS Kwas 2,4-dwuchlorofenoksyoctowy (Polish)
 SYNONYMS Kyselina 2,4-dichlorofenoxyoctova (Czech)
 SYNONYMS Lawn-keep
 SYNONYMS Macrondray
 SYNONYMS Miracle
 SYNONYMS Monosan
 SYNONYMS Moxone
 SYNONYMS Netagrone
 SYNONYMS Netagrone 600
 SYNONYMS NSC 423
 SYNONYMS Pennamine
 SYNONYMS Pennamine D
 SYNONYMS Phenox
 SYNONYMS Pielik
 SYNONYMS Plantgard
 SYNONYMS RCRA waste number U240
 SYNONYMS Rhodia
 SYNONYMS Spritz-hormin/2,4-D
 SYNONYMS Spritz-hormit/2,4-D
 SYNONYMS Superomone centre
 SYNONYMS U-5043
 SYNONYMS U 46DP
 SYNONYMS Vergemaster
 SYNONYMS Verton
 SYNONYMS Verton D
 SYNONYMS Verton 2D
 SYNONYMS Vidon 638
 SYNONYMS Weed-Ag-Bar
 SYNONYMS Weedar-64
 SYNONYMS Weedatul
 SYNONYMS Weedez Wonder BAR
 SYNONYMS Weedone LV4
 SYNONYMS Weed-rhap
 SYNONYMS Weed TOX
 SYNONYMS Weedtrol
 MOLECULAR FORMULA C₈H₆Cl₂O₃
 MOLECULAR WEIGHT 221.04
 CLASSIFICATION CODE Agricultural Chemical
 CLASSIFICATION CODE Tumor data
 CLASSIFICATION CODE Mutation data
 CLASSIFICATION CODE Reproductive Effect
 CLASSIFICATION CODE Human Data
 CLASSIFICATION CODE Skin/Eye Irritant
 CLASSIFICATION CODE Herbicide
 CLASSIFICATION CODE Growth regulator/Fertilizer
 WISWESSER LINE NOTATION QV1OR BG DG
 DATA TYPE Mutagenicity
 DATA TYPE Skin/Eye Irritation
 DATA TYPE General Toxicity
 DATA TYPE Reproductive Studies
 DATA TYPE Multiple Dose Studies
 MUTAGENICITY STUDIES
 o TEST SYSTEM : mutation in microorganisms
 o SPECIES/ROUTE/ CELL TYPE : S. typhimurium
 o DOSE : 250 ug/plate (-S9)
 o REFERENCE : Mutat Res, vol 204, pg 615, 1988 (MUREAV)
 MUTAGENICITY STUDIES
 o TEST SYSTEM : DNA repair
 o SPECIES/ROUTE/ CELL TYPE : E. coli

FIGURE 2. 2,4-D NLM TOXNET (continued)

o DOSE : 5 mg/disc
o REFERENCE : Natl Tech Inf Serv[PB80-133226] (NTIS**)
MUTAGENICITY STUDIES
o TEST SYSTEM : DNA adduct
o SPECIES/ROUTE/ CELL TYPE : E. coli
o DOSE : 20 umol/L
o REFERENCE : Mutat Res, vol 89, pg 95, 1981 (MUREAV)
MUTAGENICITY STUDIES
o TEST SYSTEM : DNA repair
o SPECIES/ROUTE/ CELL TYPE : B. subtilis
o DOSE : 5 mg/disc
o REFERENCE : Natl Tech Inf Serv[PB80-133226] (NTIS**)
MUTAGENICITY STUDIES
o TEST SYSTEM : mutation in microorganisms
o SPECIES/ROUTE/ CELL TYPE : microorganisms
o DOSE : 1 gm/L (-S9)
o REFERENCE : Microbios Lett, vol 5, pg 103, 1977 (MILEDM)
MUTAGENICITY STUDIES
o TEST SYSTEM : mutation in microorganisms
o SPECIES/ROUTE/ CELL TYPE : microorganisms
o DOSE : 1 gm/L (-S9)
o REFERENCE : Microbios Lett, vol 5, pg 103, 1977 (MILEDM)
MUTAGENICITY STUDIES
o TEST SYSTEM : mutation in microorganisms
o SPECIES/ROUTE/ CELL TYPE : microorganisms
o DOSE : 1 gm/L (-S9)
o REFERENCE : Microbios Lett, vol 5, pg 103, 1977 (MILEDM)
MUTAGENICITY STUDIES
o TEST SYSTEM : mutation in microorganisms
o SPECIES/ROUTE/ CELL TYPE : microorganisms
o DOSE : 1 gm/L (-S9)
o REFERENCE : Microbios Lett, vol 5, pg 103, 1977 (MILEDM)
MUTAGENICITY STUDIES
o TEST SYSTEM : mutation in microorganisms
o SPECIES/ROUTE/ CELL TYPE : microorganisms
o DOSE : 1 gm/L (-S9)
o REFERENCE : Microbios Lett, vol 5, pg 103, 1977 (MILEDM)
MUTAGENICITY STUDIES
o TEST SYSTEM : specific locus
o SPECIES/ROUTE/ CELL TYPE : D. melanogaster-oral
o DOSE : 5 mmol/L
o REFERENCE : Mutat Res, vol 319, pg 237, 1993 (MUREAV)
MUTAGENICITY STUDIES
o TEST SYSTEM : specific locus
o SPECIES/ROUTE/ CELL TYPE : D. melanogaster-multiple
o DOSE : 10 ppb
o REFERENCE : Environ Mol Mutagen, vol 25, pg 148, 1995 (EM)
MUTAGENICITY STUDIES
o TEST SYSTEM : sex chromosome loss and nondisjunction
o SPECIES/ROUTE/ CELL TYPE : D. melanogaster-oral
o DOSE : 25 ppm
o REFERENCE : Ecol Bull, vol 27, pg 190, 1978 (ECBUDQ)
MUTAGENICITY STUDIES
o TEST SYSTEM : sex chromosome loss and nondisjunction
o SPECIES/ROUTE/ CELL TYPE : D. melanogaster-unreported route
o DOSE : 1000 ppm/15D
o REFERENCE : Ecol Bull, vol 27, pg 182, 1978 (ECBUDQ)
MUTAGENICITY STUDIES
o TEST SYSTEM : mutation in microorganisms
o SPECIES/ROUTE/ CELL TYPE : S. cerevisiae
o DOSE : 150 mg/L (-S9)
o REFERENCE : Ecol Bull, vol 27, pg 193, 1978 (ECBUDQ)
MUTAGENICITY STUDIES
o TEST SYSTEM : gene conversion and mitotic recombination
o SPECIES/ROUTE/ CELL TYPE : A. nidulans
o DOSE : 4 umol/L

FIGURE 2. 2,4-D NLM TOXNET (continued)

o REFERENCE : Mutat Res, vol 204, pg 615, 1988 (MUREAV)
MUTAGENICITY STUDIES
o TEST SYSTEM : DNA damage
o SPECIES/ROUTE/ CELL TYPE : salmon:sperm
o DOSE : 1 mmol/L
o REFERENCE : Phytochemistry, vol 11, pg 3135, 1972 (PYTCAS)
MUTAGENICITY STUDIES
o TEST SYSTEM : unscheduled DNA synthesis
o SPECIES/ROUTE/ CELL TYPE : human:fibroblast
o DOSE : 1 umol/L
o REFERENCE : Mutat Res, vol 42, pg 161, 1977 (MUREAV)
MUTAGENICITY STUDIES
o TEST SYSTEM : cytogenetic analysis
o SPECIES/ROUTE/ CELL TYPE : human:lymphocyte
o DOSE : 20 ug/L
o REFERENCE : Cytol Genet, vol 8(3), pg 6, 1974 (CYGEDX)
MUTAGENICITY STUDIES
o TEST SYSTEM : sister chromatid exchange
o SPECIES/ROUTE/ CELL TYPE : human:lymphocyte
o DOSE : 10 mg/L
o REFERENCE : J Hered, vol 73, pg 224, 1982 (JOHEA8)
MUTAGENICITY STUDIES
o TEST SYSTEM : cytogenetic analysis
o SPECIES/ROUTE/ CELL TYPE : rat-intraperitoneal
o DOSE : 100 ug/kg
o REFERENCE : Cytologia, vol 52, pg 275, 1987 (CYTOAN)
MUTAGENICITY STUDIES
o TEST SYSTEM : DNA inhibition
o SPECIES/ROUTE/ CELL TYPE : mouse-oral
o DOSE : 200 mg/kg
o REFERENCE : Mutat Res, vol 55, pg 197, 1978 (MUREAV)
MUTAGENICITY STUDIES
o TEST SYSTEM : cytogenetic analysis
o SPECIES/ROUTE/ CELL TYPE : mouse-oral
o DOSE : 100 mg/kg
o REFERENCE : Cytol Genet, vol 8(3), pg 6, 1974 (CYGEDX)
MUTAGENICITY STUDIES
o TEST SYSTEM : DNA inhibition
o SPECIES/ROUTE/ CELL TYPE : hamster:ovary
o DOSE : 1 mmol/L
o REFERENCE : Toxicol Lett, vol 29, pg 137, 1985 (TOLED5)
MUTAGENICITY STUDIES
o TEST SYSTEM : cytogenetic analysis
o SPECIES/ROUTE/ CELL TYPE : hamster:ovary
o DOSE : 2400 mg/L
o REFERENCE : Environ Mol Mutagen, vol 10(Suppl 10), pg 1,
MUTAGENICITY STUDIES
o TEST SYSTEM : sister chromatid exchange
o SPECIES/ROUTE/ CELL TYPE : hamster:ovary
o DOSE : 167 mg/L
o REFERENCE : Environ Mol Mutagen, vol 10(Suppl 10), pg 1,
MUTAGENICITY STUDIES
o TEST SYSTEM : gene mutation in mammalian cells
o SPECIES/ROUTE/ CELL TYPE : hamster:lung
o DOSE : 10 umol/L
o REFERENCE : Chem Biol Interact, vol 19, pg 369, 1977 (CBI)
MUTAGENICITY STUDIES
o TEST SYSTEM : cytogenetic analysis
o SPECIES/ROUTE/ CELL TYPE : cattle:kidney
o DOSE : 1 ppm
o REFERENCE : In Vitro, vol 8, pg 416, 1973 (ITCSAF)

FIGURE 2. 2,4-D NLM TOXNET (continued)

MUTAGENICITY STUDIES

o TEST SYSTEM : DNA damage
 o SPECIES/ROUTE/ CELL TYPE : mammal:lymphocyte
 o DOSE : 1 mmol/L
 o REFERENCE : Phytochemistry, vol 11, pg 3135, 1972 (FYTCAS)

SKIN AND EYE IRRITATION STUDIES

o ROUTE : skin
 o SPECIES : rabbit
 o DOSE : 500 mg/24H
 o EFFECT : MILD
 o REFERENCE : Sb Vysledku Toxikologickeho Vysetreni Latek A
 279, 1972 (28ZPAK)

SKIN AND EYE IRRITATION STUDIES

o ROUTE : eye
 o SPECIES : rabbit
 o DOSE : 750 ug/24H
 o EFFECT : SEVERE
 o REFERENCE : Sb Vysledku Toxikologickeho Vysetreni Latek A
 279, 1972 (28ZPAK)

GENERAL TOXICITY STUDIES

o ROUTE : oral
 o SPECIES : man
 o STUDY TYPE : TDLo
 o DOSE : 2 gm/kg
 o EFFECT : BEHAVIORAL (Coma)
 o EFFECT : LUNGS, THORAX OR RESPIRATION (Respiratory dep
 o REFERENCE : Arch Toxicol, vol 66, pg 518, 1992 (ARTODN)

GENERAL TOXICITY STUDIES

o ROUTE : oral
 o SPECIES : man
 o STUDY TYPE : TDLo
 o DOSE : 5714 mg/kg
 o EFFECT : BEHAVIORAL (Coma)
 o EFFECT : CARDIAC (Change in rate)
 o EFFECT : LUNGS, THORAX OR RESPIRATION (Respiratory dep
 o REFERENCE : Arch Toxicol, vol 66, pg 518, 1992 (ARTODN)

GENERAL TOXICITY STUDIES

o ROUTE : oral
 o SPECIES : human
 o STUDY TYPE : LDLo
 o DOSE : 80 mg/kg
 o EFFECT : GASTROINTESTINAL (Nausea or vomiting)
 o EFFECT : BEHAVIORAL (Coma; Somnolence)
 o REFERENCE : Arch Pathol, vol 94, pg 270, 1972 (ARPAAQ)

GENERAL TOXICITY STUDIES

o ROUTE : oral
 o SPECIES : man
 o STUDY TYPE : LDLo
 o DOSE : 93 mg/kg
 o EFFECT : BEHAVIORAL (Convulsions or effect on seizure
 o REFERENCE : Pharmacol Rev, vol 14, pg 225, 1962 (PAREAQ)

GENERAL TOXICITY STUDIES

o ROUTE : oral
 o SPECIES : rat
 o STUDY TYPE : LD50
 o DOSE : 375 mg/kg
 o EFFECT : DETAILS NOT REPORTED
 o REFERENCE : Farm Chem Handb, pg C174, 1991 (FMCHA2)

GENERAL TOXICITY STUDIES

o ROUTE : skin
 o SPECIES : rat

FIGURE 2. 2,4-D NLM TOXNET (continued)

o STUDY TYPE : LD50
 o DOSE : 1500 mg/kg
 o EFFECT : DETAILS NOT REPORTED
 o REFERENCE : World Rev Pest Control, vol 9, pg 119, 1970 (
GENERAL TOXICITY STUDIES
 o ROUTE : intraperitoneal
 o SPECIES : rat
 o STUDY TYPE : LD50
 o DOSE : 666 mg/kg
 o EFFECT : PERIPHERAL NERVE AND SENSATION (Spastic paral
 sensory change)
 o EFFECT : BEHAVIORAL (Muscle weakness; Coma)
 o REFERENCE : J Ind Hyg Toxicol, vol 29, pg 85, 1947 (JIHTA
GENERAL TOXICITY STUDIES
 o ROUTE : oral
 o SPECIES : mouse
 o STUDY TYPE : LD50
 o DOSE : 347 mg/kg
 o EFFECT : DETAILS NOT REPORTED
 o REFERENCE : Roczn Panstw Zakl Hig, vol 31, pg 373, 1980 (R
GENERAL TOXICITY STUDIES
 o ROUTE : intraperitoneal
 o SPECIES : mouse
 o STUDY TYPE : LDLo
 o DOSE : 125 mg/kg
 o EFFECT : DETAILS NOT REPORTED
 o REFERENCE : Toxicol Appl Pharmacol, vol 23, pg 288, 1972
GENERAL TOXICITY STUDIES
 o ROUTE : oral
 o SPECIES : dog
 o STUDY TYPE : LD50
 o DOSE : 100 mg/kg
 o EFFECT : BEHAVIORAL (Stiffness; Coma)
 o REFERENCE : Arch Environ Health, vol 7, pg 202, 1963 (AEH
GENERAL TOXICITY STUDIES
 o ROUTE : oral
 o SPECIES : rabbit
 o STUDY TYPE : LDLo
 o DOSE : 800 mg/kg
 o EFFECT : DETAILS NOT REPORTED
 o REFERENCE : Arch Mal Prof Med Trav Secur Soc, vol 12, pg
GENERAL TOXICITY STUDIES
 o ROUTE : skin
 o SPECIES : rabbit
 o STUDY TYPE : LD50
 o DOSE : 1400 mg/kg
 o EFFECT : BEHAVIORAL (Ataxia)
 o EFFECT : SKIN AND APPENDAGES (Primary irritation)
 o REFERENCE : Assoc Food Drug Off US Q Bull, vol 16, pg 3,
GENERAL TOXICITY STUDIES
 o ROUTE : intraperitoneal
 o SPECIES : rabbit
 o STUDY TYPE : LD50
 o DOSE : 400 mg/kg
 o EFFECT : PERIPHERAL NERVE AND SENSATION (Spastic paral
 sensory change)
 o EFFECT : BEHAVIORAL (Muscle weakness; Coma)
 o REFERENCE : J Ind Hyg Toxicol, vol 29, pg 85, 1947 (JIHTA
GENERAL TOXICITY STUDIES
 o ROUTE : intravenous
 o SPECIES : rabbit

FIGURE 2. 2,4-D NLM TOXNET (continued)

o STUDY TYPE : LD50
 o DOSE : 400 mg/kg
 o EFFECT : PERIPHERAL NERVE AND SENSATION (Spastic paral
 sensory change)
 o EFFECT : BEHAVIORAL (Muscle weakness; Coma)
 o REFERENCE : J Ind Hyg Toxicol, vol 29, pg 85, 1947 (JIHTA)
 GENERAL TOXICITY STUDIES
 o ROUTE : oral
 o SPECIES : guinea pig
 o STUDY TYPE : LD50
 o DOSE : 469 mg/kg
 o EFFECT : DETAILS NOT REPORTED
 o REFERENCE : Am J Vet Res, vol 15, pg 622, 1954 (AJVRAH)
 GENERAL TOXICITY STUDIES
 o ROUTE : intraperitoneal
 o SPECIES : guinea pig
 o STUDY TYPE : LD50
 o DOSE : 666 mg/kg
 o EFFECT : PERIPHERAL NERVE AND SENSATION (Spastic paral
 sensory change)
 o EFFECT : BEHAVIORAL (Muscle weakness; Coma)
 o REFERENCE : J Ind Hyg Toxicol, vol 29, pg 85, 1947 (JIHTA)
 GENERAL TOXICITY STUDIES
 o ROUTE : oral
 o SPECIES : hamster
 o STUDY TYPE : LD50
 o DOSE : 500 mg/kg
 o EFFECT : DETAILS NOT REPORTED
 o REFERENCE : Toxicol Appl Pharmacol, vol 48, pg A192, 1979
 GENERAL TOXICITY STUDIES
 o ROUTE : oral
 o SPECIES : chicken
 o STUDY TYPE : LD50
 o DOSE : 541 mg/kg
 o EFFECT : GASTROINTESTINAL (Gastritis)
 o EFFECT : BEHAVIORAL (Somnolence)
 o EFFECT : LIVER (Fatty liver degeneration)
 o REFERENCE : Am J Vet Res, vol 15, pg 622, 1954 (AJVRAH)
 GENERAL TOXICITY STUDIES
 o ROUTE : oral
 o SPECIES : mammal
 o STUDY TYPE : LD50
 o DOSE : 375 mg/kg
 o EFFECT : DETAILS NOT REPORTED
 o REFERENCE : Science, vol 165, pg 465, 1969 (SCIEAS)
 REPRODUCTIVE STUDIES
 o ROUTE : oral
 o SPECIES : rat
 o STUDY TYPE : TDLo
 o DOSE : 220 ug/kg (1-22D preg)
 o EFFECT : SPECIFIC DEVELOPMENTAL ABNORMALITIES (Blood a
 systems)
 o REFERENCE : Gig Sanit, vol 50(10), pg 76, 1985 (GISAAA)
 REPRODUCTIVE STUDIES
 o ROUTE : oral
 o SPECIES : rat
 o STUDY TYPE : TDLo
 o DOSE : 1 gm/kg (6-15D preg)
 o EFFECT : SPECIFIC DEVELOPMENTAL ABNORMALITIES (Musculo
 o EFFECT : EFFECTS ON EMBRYO OR FETUS (Fetotoxicity; Fet
 o REFERENCE : Toxicol Appl Pharmacol, vol 22, pg 14, 1972 (

FIGURE 2. 2,4-D NLM TOXNET (continued)

REPRODUCTIVE STUDIES

o ROUTE : oral
 o SPECIES : rat
 o STUDY TYPE : TDLo
 o DOSE : 125 mg/kg (6-15D preg)
 o EFFECT : SPECIFIC DEVELOPMENTAL ABNORMALITIES (Musculo
 o REFERENCE : Food Cosmet Toxicol, vol 9, pg 801, 1971 (FCT

REPRODUCTIVE STUDIES

o ROUTE : oral
 o SPECIES : rat
 o STUDY TYPE : TDLo
 o DOSE : 500 mg/kg (6-15D preg)
 o EFFECT : EFFECTS ON EMBRYO OR FETUS (Fetotoxicity)
 o EFFECT : SPECIFIC DEVELOPMENTAL ABNORMALITIES (Central
 Urogenital system)

o REFERENCE : Food Cosmet Toxicol, vol 9, pg 801, 1971 (FCT

REPRODUCTIVE STUDIES

o ROUTE : oral
 o SPECIES : rat
 o STUDY TYPE : TDLo
 o DOSE : 500 mg/kg (6-15D preg)
 o EFFECT : SPECIFIC DEVELOPMENTAL ABNORMALITIES (Homeost
 o EFFECT : EFFECTS ON NEWBORN (Growth statistics)
 o REFERENCE : Food Cosmet Toxicol, vol 9, pg 801, 1971 (FCT

REPRODUCTIVE STUDIES

o ROUTE : oral
 o SPECIES : mouse
 o STUDY TYPE : TDLo
 o DOSE : 707 mg/kg (11-14D preg)
 o EFFECT : EFFECTS ON EMBRYO OR FETUS (Fetotoxicity; Fet
 o EFFECT : SPECIFIC DEVELOPMENTAL ABNORMALITIES (Craniof
 o REFERENCE : Arch Environ Contam Toxicol, vol 6, pg 33, 19

REPRODUCTIVE STUDIES

o ROUTE : oral
 o SPECIES : mouse
 o STUDY TYPE : TDLo
 o DOSE : 900 mg/kg (6-14D preg)
 o EFFECT : EFFECTS ON FERTILITY (Litter size)
 o EFFECT : EFFECTS ON EMBRYO OR FETUS (Extra embryonic s
 o EFFECT : SPECIFIC DEVELOPMENTAL ABNORMALITIES (Eye, ea
 o REFERENCE : Natl Tech Inf Serv[PB223-160] (NTIS**)

REPRODUCTIVE STUDIES

o ROUTE : oral
 o SPECIES : mouse
 o STUDY TYPE : TDLo
 o DOSE : 438 mg/kg (8-12D preg)
 o EFFECT : EFFECTS ON NEWBORN (Growth statistics)
 o REFERENCE : Teratogen Carcinog Mutagen, vol 7, pg 7, 1987

REPRODUCTIVE STUDIES

o ROUTE : subcutaneous
 o SPECIES : mouse
 o STUDY TYPE : TDLo
 o DOSE : 882 mg/kg (6-14D preg)
 o EFFECT : EFFECTS ON EMBRYO OR FETUS (Fetal death)
 o EFFECT : SPECIFIC DEVELOPMENTAL ABNORMALITIES (Central
 o EFFECT : EFFECTS ON EMBRYO OR FETUS (Extra embryonic s
 o REFERENCE : Natl Tech Inf Serv[PB223-160] (NTIS**)

REPRODUCTIVE STUDIES

o ROUTE : subcutaneous
 o SPECIES : mouse
 o STUDY TYPE : TDLo

FIGURE 2. 2,4-D NLM TOXNET (continued)

o DOSE : 900 mg/kg (6-14D preg)
 o EFFECT : EFFECTS ON EMBRYO OR FETUS (Fetotoxicity)
 o EFFECT : SPECIFIC DEVELOPMENTAL ABNORMALITIES (Eye, ea
 o REFERENCE : Natl Tech Inf Serv[PB223-160] (NTIS**)

REPRODUCTIVE STUDIES

o ROUTE : subcutaneous
 o SPECIES : mouse
 o STUDY TYPE : TDLo
 o DOSE : 900 mg/kg (6-14D preg)
 o EFFECT : EFFECTS ON FERTILITY (Pre-implantation mortal
 o REFERENCE : Natl Tech Inf Serv[PB223-160] (NTIS**)

REPRODUCTIVE STUDIES

o ROUTE : oral
 o SPECIES : hamster
 o STUDY TYPE : TDLo
 o DOSE : 200 mg/kg (7-11D preg)
 o EFFECT : EFFECTS ON FERTILITY (Litter size)
 o REFERENCE : Bull Environ Contam Toxicol, vol 6, pg 559, 1

MULTIPLE DOSE TOXICITY STUDIES

o ROUTE : oral
 o SPECIES : rat
 o STUDY TYPE : TDLo
 o DOSE : 13650 mg/kg/13W-C
 o EFFECT : NUTRITIONAL AND GROSS METABOLIC (Weight loss
 gain)
 o REFERENCE : Fundam Appl Toxicol, vol 9, pg 423, 1987 (FAA)

MULTIPLE DOSE TOXICITY STUDIES

o ROUTE : oral
 o SPECIES : rat
 o STUDY TYPE : TDLo
 o DOSE : 200 mg/kg/5W-I
 o EFFECT : BEHAVIORAL (Muscle weakness)
 o REFERENCE : Neurobehav Toxicol Teratol, vol 5, pg 331, 19

MULTIPLE DOSE TOXICITY STUDIES

o ROUTE : oral
 o SPECIES : rat
 o STUDY TYPE : TDLo
 o DOSE : 54750 mg/kg/1Y-C
 o EFFECT : SENSE ORGANS AND SPECIAL SENSES (Retinal chan
 o EFFECT : BEHAVIORAL (Change in motor activity)
 o REFERENCE : Toxicologist, vol 15, pg 23, 1995 (TOXID9)

MULTIPLE DOSE TOXICITY STUDIES

o ROUTE : oral
 o SPECIES : dog
 o STUDY TYPE : TDLo
 o DOSE : 700 mg/kg/90D-I
 o EFFECT : BLOOD (Changes in other cell countunspecified
 o EFFECT : NUTRITIONAL AND GROSS METABOLIC (Weight loss
 gain)
 o EFFECT : OTHER MULTIPLE DOSE TOXICITY DATA (Death in t
 data field)

o REFERENCE : AMA Arch Ind Hyg Occup Med, vol 7, pg 61, 195

MULTIPLE DOSE TOXICITY STUDIES

o ROUTE : oral
 o SPECIES : dog
 o STUDY TYPE : TDLo
 o DOSE : 1820 mg/kg/52W-C
 o EFFECT : KIDNEY, URETER, BLADDER (Changes in tubules)
 o EFFECT : LIVER (Other changes)
 o EFFECT : BLOOD (Changes in serum composition TP, bilir
 cholesterol...)

FIGURE 2. 2,4-D NLM TOXNET (continued)

o REFERENCE : Fundam Appl Toxicol, vol 29, pg 78, 1996 (FAA
MULTIPLE DOSE TOXICITY STUDIES
o ROUTE : intravenous
o SPECIES : dog
o STUDY TYPE : TDLo
o DOSE : 300 mg/kg/6D-1
o EFFECT : MUSCULO-SKELETAL (Changes in teeth and suppor
o EFFECT : SKIN AND APPENDAGES (After systemic exposure:
o EFFECT : OTHER MULTIPLE DOSE TOXICITY DATA (Death in t
data field)
o REFERENCE : J Ind Hyg Toxicol, vol 29, pg 85, 1947 (JIHTA
TOXICOLOGY REVIEW TOXICOLOGY REVIEW; RREVAH 59,1,75; Residue Rev
TOXICOLOGY REVIEW TOXICOLOGY REVIEW; DTTIAF 80,485,73; Dtsch Tieraerz
TOXICOLOGY REVIEW TOXICOLOGY REVIEW; RREVAH 56,107,75; Residue Rev
TOXICOLOGY REVIEW TOXICOLOGY REVIEW; ECMAAI 14,141,73; Econ Med Anim
TOXICOLOGY REVIEW TOXICOLOGY REVIEW; BIOGAL 40(2),44,74; Biologico
TOXICOLOGY REVIEW TOXICOLOGY REVIEW; HYSAAV 31(7-9),383,66; Hyg Sanit
CANCER REVIEW IARC CANCER REVIEW; Human Limited Evidence; IMEMDT
Monogr Eval Carcinog Risk Chem Man
CANCER REVIEW IARC CANCER REVIEW; Animal Inadequate Evidence; IME
Monogr Eval Carcinog Risk Chem Man
THRESHOLD LIMIT VALUE ACGIH THRESHOLD LIMIT VALUE REVIEW; TWA 10 mg/m3; 8
Threshold Limit Values
NIOSH RECOMMENDED LIMITS NIOSH REL TO 2,4-D-air:10H TWA 10 mg/m3; NIOSH* DHH
Inst Occup Saf Health
NIOSH EXPOSURE SURVEYS NATIONAL OCCUPATIONAL HAZARD SURVEY 1974: Hazard#:
industries: 6; total number of facilities: 1132; nu
occupations: 8; total number of employees: 6266
NIOSH EXPOSURE SURVEYS NATIONAL OCCUPATIONAL EXPOSURE SURVEY 1983: Hazard#
industries: 1; total number of facilities: 94; numb
1; total number of employees: 471
STANDARDS AND REGULATIONS EPA FIFRA 1988 PESTICIDE SUBJECT TO REGISTRATION OR
FEREAC 54,7740,89; Fed Regist
STANDARDS AND REGULATIONS MSHA STANDARD-air:TWA 10 mg/m3; DTLVS* 3,67,71; Doc
Values
STANDARDS AND REGULATIONS OSHA PEL (Gen Indu):8H TWA 10 mg/m3; CFRGBR 29,1910
Regul
STANDARDS AND REGULATIONS OSHA PEL (Construc):8H TWA 10 mg/m3; CFRGBR 29,1926
Regul
STANDARDS AND REGULATIONS OSHA PEL (Shipyard):8H TWA 10 mg/m3; CFRGBR 29,1915
Regul
STANDARDS AND REGULATIONS OSHA PEL (Fed Cont):8H TWA 10 mg/m3; CFRGBR 41,50-2
Regul
STANDARDS AND REGULATIONS OEL-AUSTRALIA:TWA 10 mg/m3 JAN93
STANDARDS AND REGULATIONS OEL-AUSTRIA:TWA 10 mg/m3 JAN93
STANDARDS AND REGULATIONS OEL-BELGIUM:TWA 10 mg/m3 JAN93
STANDARDS AND REGULATIONS OEL-DENMARK:TWA 5 mg/m3 JAN93
STANDARDS AND REGULATIONS OEL-FINLAND:TWA 10 mg/m3;STEL 20 mg/m3;Skin JAN93
STANDARDS AND REGULATIONS OEL-FRANCE:TWA 10 mg/m3 JAN93
STANDARDS AND REGULATIONS AOEL-GERMANY:TWA 10 mg/m3 JAN93
STANDARDS AND REGULATIONS OEL-HUNGARY:TWA 1 mg/m3;STEL 2 mg/m3;Skin JAN93
STANDARDS AND REGULATIONS OEL-THE NETHERLANDS:TWA 10 mg/m3 JAN93
STANDARDS AND REGULATIONS OEL-THE PHILIPPINES:TWA 10 mg/m3 JAN93
STANDARDS AND REGULATIONS OEL-POLAND:TWA 7 mg/m3 JAN93
STANDARDS AND REGULATIONS OEL-SWITZERLAND:TWA 10 mg/m3;STEL 50 mg/m3 JAN93
STANDARDS AND REGULATIONS OEL-THAILAND:TWA 10 mg/m3 JAN93
STANDARDS AND REGULATIONS OEL-TURKEY:TWA 10 mg/m3 JAN93
STANDARDS AND REGULATIONS OEL-UNITED KINGDOM:TWA 10 mg/m3;STEL 20 mg/m3 JAN93
STANDARDS AND REGULATIONS OEL IN BULGARIA, COLOMBIA, JORDAN, KOREA check ACGI
STANDARDS AND REGULATIONS OEL IN NEW ZEALAND, SINGAPORE, VIETNAM check ACGIH
FEDERAL PROGRAM STATUS EPA GENETOX PROGRAM 1988, Positive: In vivo cytogen

FIGURE 2. 2,4-D NLM TOXNET (continued)

marrow FEDERAL PROGRAM STATUS	EPA GENETOX PROGRAM 1988, Positive: In vitro cyto
lymphocyte FEDERAL PROGRAM STATUS	EPA GENETOX PROGRAM 1988, Positive: B subtilis rec
without S9 FEDERAL PROGRAM STATUS	EPA GENETOX PROGRAM 1988, Positive: V79 cell cultur
FEDERAL PROGRAM STATUS	EPA GENETOX PROGRAM 1988, Positive: S cerevisiae ge
FEDERAL PROGRAM STATUS	EPA GENETOX PROGRAM 1988, Negative: D melanogaster-
loss FEDERAL PROGRAM STATUS	EPA GENETOX PROGRAM 1988, Negative: D melanogaster-
FEDERAL PROGRAM STATUS	EPA GENETOX PROGRAM 1988, Negative: Histidine rever
FEDERAL PROGRAM STATUS	EPA GENETOX PROGRAM 1988, Negative: D melanogaster
FEDERAL PROGRAM STATUS	EPA GENETOX PROGRAM 1988, Negative: In vitro UDS-hu
reversion FEDERAL PROGRAM STATUS	EPA GENETOX PROGRAM 1988, Negative: S cerevisiae-ho
FEDERAL PROGRAM STATUS	EPA GENETOX PROGRAM 1988, Inconclusive: Carcinogeni
Mammalian micronucleus FEDERAL PROGRAM STATUS	EPA TSCA Section 8(b) CHEMICAL INVENTORY
FEDERAL PROGRAM STATUS	EPA TSCA Section 8(d) unpublished health/safety stu
FEDERAL PROGRAM STATUS	On EPA IRIS database
FEDERAL PROGRAM STATUS	EPA TSCA TEST SUBMISSION (TSCATS) DATA BASE, JULY 1
FEDERAL PROGRAM STATUS	NIOSH Analytical Method, 1994: 2,4-D, 5001
FEDERAL PROGRAM STATUS	NTP Carcinogenesis studies; on test (prechronic stu

[RTECS] SS 3 /cf?
USER:

FIGURE 3. TNT IN DIALOG

DIALOG(R)File 336:RTECS

Comp & dist by NIOSH, Intl Copyright All . All rts. reserv.

128887 RTECS Number: XU0175000

Substance Name: Toluene, 2,4,6-trinitro-

CAS Registry Number: 118-96-7 Molecular Formula: C₇H₅N₃O₆

Molecular Weight: 227.15

Synonyms: Benzene, 2-methyl-1,3,5-trinitro- ; Entsufo ;

2-Methyl-1,3,5-trinitrobenzene ; NCI-C56155 ; TNT ; alpha-Tnt ; TNT (OSHA) ; TNT, dry or wetted with <30% water, by weight (UN0209) (DOT) ;

TNT-tolite (French) ; Tolit ; Tolite ; 2,4,6-Trinitrotolueen (Dutch) ;

Trinitrotoluene ; Trinitrotoluene (UN0209) (DOT) ; Trinitrotoluene,

wetted with not <30% water, by weight (UN1356) (DOT) ;

s-Trinitrotoluene ; sym-Trinitrotoluene ; 2,4,6-Trinitrotoluene

(ACGIH:OSHA) ; s-Trinitrotoluol ; sym-Trinitrotoluol ;

2,4,6-Trinitrotoluol (German) ; Tritol ; Triton ; Trojnitrotoluen

(Polish) ; Trotyl ; Trotyl oil ; UN0209 (DOT) ; UN1356 (DOT)

Compound Class: Agricultural Chemical; Tumorigen; Mutagen; Reproductive Effector; Human Data; Primary Irritant

Wiswesser Line Notation: WNR B1 CNW ENW

Record Date: 9607

IRRITATION DATA:

Skin Rabbit 500 mg/24H Mild NTIS** AD-B011-150

MUTATION DATA:

Mutation in microorganisms Salmonella typhimurium 10 ug/plate
NTIS** AD-A080-146

Body fluid assay Rat Salmonella typhimurium 50 mg/kg MUREAV
262,167,91

Mutation in mammalian somatic cells Mouse Lymphocyte 40 mg/L
CALEDQ 20,103,83

REPRODUCTIVE EFFECTS DATA:

Testes, epididymis, sperm duct Oral Rat TDLo 5376 mg/kg 28D male
JTEHD6 9,565,82

TOXICITY EFFECTS DATA:

Hallucinations, distorted perceptions ;Cyanosis ;Gastrointestinal—Other
changes Oral Human LDLo 28 gm/kg 34ZIAG -,610,69

Somnolence (general depressed activity) ;Tremor ;Convulsions or effect on
seizure threshold Oral Rat LD50 795 mg/kg JTEHD6 9,565,82

Somnolence (general depressed activity) ;Tremor ;Convulsions or effect on
seizure threshold Oral Mouse LD50 660 mg/kg JTEHD6 9,565,82

Dyspnea ;Cyanosis ;Dermatitis, allergic (after systemic exposure) Oral
Cat LDLo 1850 mg/kg MRCSAB 58,32,21

FIGURE 3. TNT IN DIALOG (continued)

Dyspnea ;Cyanosis ;Dermatitis, allergic (after systemic exposure)
Subcutaneous Cat LDLo 200 mg/kg MRCSAB 58,32,21
Convulsions or effect on seizure threshold ;Hypermotility, diarrhea
;Cyanosis Oral Rabbit LDLo 500 mg/kg MRCSAB 58,32,21
Convulsions or effect on seizure threshold ;Hypermotility, diarrhea
;Cyanosis Subcutaneous Rabbit LDLo 500 mg/kg MRCSAB 58,32,21

OTHER MULTIPLE DOSE EFFECTS DATA:

Liver--Other changes ; Changes in serum composition (e.g., TP, bilirubin,
cholesterol) ; Changes in testicular weight ; Oral Rat TDLo 7200
mg/kg/6W-I TOLED5 55,343,91
Food intake (animal) ; Normocytic anemia ; Weight loss or decreased
weight gain ; Oral Rat TDLo 11375 mg/kg/13W-C TXCYAC 32,253,84

Liver--Other changes ; Monamine oxidase ; Lipids including transport ;
Oral Rat TDLo 3 gm/kg/30D-I GTPZAB 18(10),57,74
Changes in liver weight ; Changes in Spleen weight ; Changes in spleen ;
Oral Mouse TDLo 11 mg/kg/13W-C JTEHD6 9,565,82
Changes in liver weight ; Normocytic anemia ; Weight loss or decreased
weight gain ; Oral Dog TDLo 182 mg/kg/13W-C JTEHD6 9,565,82
Changes in liver weight ; Normocytic anemia ; Changes in spleen ; Oral
Dog TDLo 1456 mg/kg/26W-I TXCYAC 63,233,90

REVIEWS:

ACGIH TLV-TWA 0.5 mg/m³ (skin) 85INA8 6,1652,91
IARC Cancer Review:Animal Inadequate Evidence IMEMDT 65,449,96
IARC Cancer Review:Human Inadequate Evidence IMEMDT 65,449,96
IARC Cancer Review:Group 3 IMEMDT 65,449,96
TOXICOLOGY REVIEW NTIS** AD778-725
TOXICOLOGY REVIEW CRTXB2 1(1),93,71
TOXICOLOGY REVIEW PAREAQ 4,1,52

STANDARDS AND REGULATIONS:

DOT-HAZARD EXPLOSIVE 1.1D; LABEL:EXPLOSIVE 1.1D (UN0209) CFRGBR
49,172.101,92
DOT-HAZARD 4.1; LABEL:FLAMMABLE SOLID (UN1356) CFRGBR 49,172.101,92
MSHA STANDARD-air TWA 0.2 ppm (0.5 mg/m³) (skin) DTLVS* 3,270,71
OSHA PEL (Gen Indu) 8H TWA 1.50 mg/m³ (skin) CFRGBR 29,1910.1000,94
OSHA PEL (Construc) 8H TWA 1.50 mg/m³ (skin) CFRGBR 29,1926.55,94
OSHA PEL (Shipyard) 8H TWA 1.50 mg/m³ (skin) CFRGBR 29,1915.1000,93
OSHA PEL (Fed Cont) 8H TWA 1.50 mg/m³ (skin) CFRGBR 41,50-204.50,94
OEL-ARAB Republic of Egypt TWA 0.5 mg/m³ JAN93
OEL-AUSTRALIA TWA 0.5 mg/m³;Skin JAN93
OEL-BELGIUM TWA 0.5 mg/m³;Skin JAN93
OEL-DENMARK STEL 0.5 mg/m³;Skin JAN93
OEL-FINLAND TWA 0.5 mg/m³;STEL 3 mg/m³;Skin JAN93

FIGURE 3. TNT IN DIALOG (continued)

OEL-FRANCE TWA 0.5 mg/m³;Skin JAN93
OEL-GERMANY TWA 0.01 ppm (0.1 mg/m³);Skin;Carcinogen JAN93
OEL-HUNGARY TWA 0.3 mg/m³;STEL 0.5 mg/m³;Skin JAN93
OEL-THE NETHERLANDS TWA 0.5 mg/m³;Skin JAN93
OEL-THE PHILIPPINES TWA 1.5 mg/m³;Skin JAN93
OEL-RUSSIA TWA 0.1 mg/m³;STEL 0.5 mg/m³;Skin JAN93
OEL-SWITZERLAND TWA 0.01 ppm (0.1 mg/m³);STEL 0.02 ppm;Skin JAN93
OEL-TURKEY TWA 1.5 mg/m³;Skin JAN93
OEL-UNITED KINGDOM TWA 0.5 mg/m³;STEL 0.5 mg/m³ JAN93
OEL IN BULGARIA COLOMBIA, JORDAN, KOREA check ACGIH TLV
OEL IN NEW ZEALAND SINGAPORE, VIETNAM check ACGIH TLV

NIOSH CRITERIA DOCUMENTS:

NIOSH REL TO 2,4,6 TRINITROTOLUENE-air:10H TWA 0.5 mg/m³ (Sk) NIOSH*
DHHS #92-100,92
NOES 1983: HZD 74550; NIS 2; TNF 10; NOS 1; TNE 31

NTP, NIOSH, EPA STATUS:

EPA GENETOX PROGRAM 1988, Positive: Histidine reversion-Ames test
EPA TSCA Section 8(b) CHEMICAL INVENTORY
EPA TSCA Section 8(d) unpublished health/safety studies
On EPA IRIS database
EPA TSCA TEST SUBMISSION (TSCATS) DATA BASE, JULY 1996
OSHA ANALYTICAL METHOD #44

IRRITATION EFFECTS JOURNAL REFERENCES:

NTIS** National Technical Information Service. Springfield, VA 22161
Formerly U.S. Clearinghouse for Scientific & Technical Information.

MUTATION EFFECTS JOURNAL REFERENCES:

CALEDQ Cancer Letters (Shannon, Ireland). Elsevier Scientific Pub.
Ireland Ltd., POB 85, Limerick, Ireland V.1- 1975-
MUREAV Mutation Research. Elsevier Science Pub. B.V., POB 211, 1000 AE
Amsterdam, Netherlands V.1- 1964-
NTIS** National Technical Information Service. Springfield, VA 22161
Formerly U.S. Clearinghouse for Scientific & Technical Information.

REPRODUCTIVE EFFECTS JOURNAL REFERENCES:

JTEHD6 Journal of Toxicology and Environmental Health. Hemisphere Pub.,
1025 Vermont Ave., NW, Washington, DC 20005 V.1- 1975/76-

TOXICITY EFFECTS JOURNAL REFERENCES:

- JTEHD6 Journal of Toxicology and Environmental Health. Hemisphere Pub.,
1025 Vermont Ave., NW, Washington, DC 20005 V.1- 1975/76-
MRC SAB Special Report Series--Medical Research Council (United Kingdom).
Her Majesty's Stationery Office, P.O. Box 569, London SE1 9NH, UK
No.1- 1915-
34ZIAG Toxicology of Drugs and Chemicals, Deichmann, W.B., New York,
Academic Press, Inc., 1969

OTHER MULTIPLE DOSE EFFECTS JOURNAL REFERENCES:

- GTPZAB Gigiena Truda i Professional'nye Zabolevaniya. Labor Hygiene and
Occupational Diseases. V/O Mezhdunarodnaya Kniga, 113095 Moscow, USSR
V.1- 1957-
JTEHD6 Journal of Toxicology and Environmental Health. Hemisphere Pub.,
1025 Vermont Ave., NW, Washington, DC 20005 V.1- 1975/76-
TOLED5 Toxicology Letters. Elsevier Science Pub. B.V., POB 211, 1000 AE
Amsterdam, Netherlands V.1- 1977-
TXCYAC Toxicology. Elsevier Scientific Pub. Ireland, Ltd., POB 85,
Limerick, Ireland V.1- 1973-

REVIEWS JOURNAL REFERENCES:

- CRTXB2 CRC Critical Reviews in Toxicology. CRC Press, Inc., 2000
Corporate Blvd., NW, Boca Raton, FL 33431 V.1- 1971-
IMEMDT IARC Monographs on the Evaluation of Carcinogenic Risk of
Chemicals to Man. WHO Publications Centre USA, 49 Sheridan Ave.,
Albany, NY 12210 V.1- 1972-
NTIS** National Technical Information Service. Springfield, VA 22161
Formerly U.S. Clearinghouse for Scientific & Technical Information.
PAREAQ Pharmacological Reviews. Williams & Wilkins, 428 E. Preston St.,
Baltimore, MD 21202 V.1- 1949-
85INA8 Documentation of the Threshold Limit Values and Biological
Exposure Indices, 5th ed., Cincinnati, OH, American Conference of
Governmental Industrial Hygienists, Inc., 1986

STANDARDS & REGULATIONS JOURNAL REFERENCES:

- CFRGBR Code of Federal Regulations. U.S. Government Printing Office,
Supt. of Documents, Washington, DC 20402
DTLVS* Documentation of Threshold Limit Values for Substances in
Workroom Air. For publisher information, see 85INA8.

DATA PRESENT: Irritation Effects; Mutation Effects; Reproductive Effects;
Toxicity Effects; Human Toxicity Effects; Other Multiple Dose Effects;
Reviews; Standards and Regulations; NIOSH Criteria Documents; NTP,
NIOSH, EPA Status

FIGURE 4. 2,4-D IN DIALOG

DIALOG(R)File 336:RTECS

Comp & dist by NIOSH, Intl Copyright All . All rts. reserv.

004374 RTECS Number: AG6825000

Substance Name: Acetic acid, (2,4-dichlorophenoxy)-

CAS Registry Number: 94-75-7 Molecular Formula: C8H6Cl2O3

Molecular Weight: 221.04

Synonyms: Acide 2,4-dichloro phenoxyacetique (French) ;

Acido(2,4-dicloro-fenossi)-acetico (Italian) ; Acme amine 4 ; Acme butyl ester 4 ; Acme LV 4 ; Agrotect ; Amidox ; Amoxone ; Aqua-Kleen ; Barrage ; BH 2,4-D ; Brush-rhap ; B-Selektonon ; Chipco turf herbicide "D" ; Chloroxone ; Citrus fix ; Crop rider ; 2,4-D (ACGIH:OSHA) ; 2,4-D acid ; Debroussaillant 600 ; Decamine ; Deherban ; (2,4-Dichloor-fenoxy)-azijnzuur (Dutch) ; Dichlorophenoxyacetic acid ; 2,4-Dichlorophenoxyacetic acid ; Dichlorophenoxyacetic acid (OSHA) ; 2,4-Dichlorophenoxyacetic acid ; (2,4-Dichlor-phenoxy)-essigsaeure (German) ; Dicopur ; DMA-4 ; Dormone ; 2,4-Dwuchlorofenoksyoctowy kwas (Polish) ; Emulsamine BK ; Emulsamine E-3 ; ENT 8,538 ; Envert 171 ; Envert DT ; Estone ; Farmco ; Fernimine ; Fernoxone ; Ferxone ; Foredex 75 ; Hedonal ; Hedonal (the herbicide) ; Herbidal ; Hivol-44 ; Ipaner ; Kwasu 2,4-dwuchlorofenoksyoctowego (Polish) ; Kwas 2,4-dwuchlorofenoksyoctowy (Polish) ; Kyselina 2,4-dichlorfenoxyoctova (Czech) ; Lawn-keep ; Macrondray ; Miracle ; Monosan ; Moxone ; Netagrone ; Netagrone 600 ; NSC 423 ; Pennamine ; Pennamine D ; Phenox ; Pielik ; Plantgard ; RCRA waste number U240 ; Rhodia ; Spritz-hormin/2,4-D ; Spritz-hormit/2,4-D ; Superormone concentre ; U-5043 ; U 46DP ; Vergemaster ; Verton ; Verton D ; Verton 2D ; Vidon 638 ; Weed-Ag-Bar ; Weedar-64 ; Weedatul ; Weedez Wonder BAR ; Weedone LV4 ; Weed-rhap ; Weed TOX ; Weedtrol

Compound Class: Agricultural Chemical; Tumorigen; Mutagen; Reproductive Effector; Human Data; Primary Irritant

Wiswesser Line Notation: QV1OR BG DG

Record Date: 9607

IRRITATION DATA:

Skin Rabbit 500 mg/24H Mild 28ZPAK -,279,72

Eye Rabbit 750 ug/24H Severe 28ZPAK -,279,72

MUTATION DATA:

Mutation in microorganisms Salmonella typhimurium 250 ug/plate
MUREAV 204,615,88

DNA repair Escherichia coli 5 mg/disc NTIS** PB80-133226

DNA adduct Escherichia coli 20 umol/L MUREAV 89,95,81

DNA repair Bacillus subtilis 5 mg/disc NTIS** PB80-133226

Mutation in microorganisms Other microorganisms 1 gm/L MILEDM
5,103,77

FIGURE 4. 2,4-D IN DIALOG (continued)

Mutation in microorganisms Other microorganisms 1 gm/L MILEDM
5,103,77

Mutation in microorganisms Other microorganisms 1 gm/L MILEDM
5,103,77

Mutation in microorganisms Other microorganisms 1 gm/L MILEDM
5,103,77

Specific locus test *Drosophila melanogaster* Oral 5 mmol/L MUREAV
319,237,93

Specific locus test *Drosophila melanogaster* Multiple routes 10 ppb
EMMUEG 25,148,95

Sex chromosome loss and nondisjunction *Drosophila melanogaster* Oral
25 ppm ECBUDQ 27,190,78

Sex chromosome loss and nondisjunction *Drosophila melanogaster*
Unreported 1000 ppm/15D ECBUDQ 27,182,78

Mutation in microorganisms *Saccharomyces cerevisiae* 150 mg/L
ECBUDQ 27,193,78

Gene conversion and mitotic recombination *Aspergillus nidulans* 4
umol/L MUREAV 204,615,88

DNA damage Salmon Sperm 1 mmol/L PYTCAS 11,3135,72

Unscheduled DNA synthesis Human Fibroblast 1 umol/L MUREAV
42,161,77

Cytogenetic analysis Human Lymphocyte 20 ug/L CYGEDX 8(3),6,74

Sister chromatid exchange Human Lymphocyte 10 mg/L JOHEA8
73,224,82

Cytogenetic analysis Rat Intraperitoneal 100 ug/kg CYTOAN
52,275,87

DNA inhibition Mouse Oral 200 mg/kg MUREAV 55,197,78

Cytogenetic analysis Mouse Oral 100 mg/kg CYGEDX 8(3),6,74

DNA inhibition Hamster Ovary 1 mmol/L TOLED5 29,137,85

Cytogenetic analysis Hamster Ovary 2400 mg/L EMMUEG 10(Suppl)

Sister chromatid exchange Hamster Ovary 167 mg/L EMMUEG 10(Suppl)

Mutation in mammalian somatic cells Hamster Lung 10 umol/L CBINA8
19,369,77

Cytogenetic analysis Cattle Kidney 1 ppm ITCSAF 8,416,73

DNA damage Mammal (species unspecified) Lymphocyte 1 mmol/L
PYTCAS 11,3135,72

REPRODUCTIVE EFFECTS DATA:

Developmental Abnormalities: Blood and lymphatic systems Oral Rat TDLo
220 ug/kg 1-22D preg GISAAA 50(10),76,85

Developmental Abnormalities: Musculoskeletal system ;Fetotoxicity (except
death) ;Fetal death Oral Rat TDLo 1 gm/kg 6-15D preg TXAPA9
22,14,72

Developmental Abnormalities: Musculoskeletal system Oral Rat TDLo
125 mg/kg 6-15D preg FCTXAV 9,801,71

FIGURE 4. 2,4-D IN DIALOG (continued)

Fetotoxicity (except death) ;Developmental Abnormalities: Central nervous system ;Developmental Abnormalities: Urogenital system Oral Rat TDLo 500 mg/kg 6-15D preg FCTXAV 9,801,71
Developmental Abnormalities: Homeostasis ;Growth statistics Oral Rat TDLo 500 mg/kg 6-15D preg FCTXAV 9,801,71
Fetotoxicity (except death) ;Fetal death ;Developmental Abnormalities: Craniofacial Oral Mouse TDLo 707 mg/kg 11-14D preg AECTCV 6,33,77
Litter size ;Extra embryonic structures ;Developmental Abnormalities: Eye, ear Oral Mouse TDLo 900 mg/kg 6-14D preg NTIS** PB223-160
Growth statistics Oral Mouse TDLo 438 mg/kg 8-12D preg TCMUD8 7,7,87
Fetal death ;Developmental Abnormalities: Central nervous system ;Extra embryonic structures Subcutaneous Mouse TDLo 882 mg/kg 6-14D preg NTIS** PB223-160
Fetotoxicity (except death) ;Developmental Abnormalities: Eye, ear ;Developmental Abnormalities: Craniofacial Subcutaneous Mouse TDLo 900 mg/kg 6-14D preg NTIS** PB223-160
Pre-implantation mortality ;Litter size Subcutaneous Mouse TDLo 900 mg/kg 6-14D preg NTIS** PB223-160
Litter size Oral Hamster TDLo 200 mg/kg 7-11D preg BECTA6 6,559,71

TOXICITY EFFECTS DATA:

Coma ;Respiratory depression Oral Man TDLo 2 gm/kg ARTODN 66,518,92
Coma ;Change in rate ;Respiratory depression Oral Man TDLo 5714 mg/kg ARTODN 66,518,92
Nausea or vomiting ;Coma ;Somnolence (general depressed activity) Oral Human LDLo 80 mg/kg ARPAAQ 94,270,72
Convulsions or effect on seizure threshold Oral Man LDLo 93 mg/kg PAREAQ 14,225,62
* Oral Rat LD50 375 mg/kg FMCHA2 -,C174,91
* Skin Rat LD50 1500 mg/kg WRPCA2 9,119,70
Spastic paralysis with or without sensory change ;Muscle weakness ;Coma Intraperitoneal Rat LD50 666 mg/kg JIHTAB 29,85,47
* Oral Mouse LD50 347 mg/kg RPZHAW 31,373,80
* Intraperitoneal Mouse LDLo 125 mg/kg TXAPA9 23,288,72
Stiffness ;Coma Oral Dog LD50 100 mg/kg AEHLAU 7,202,63
* Oral Rabbit LDLo 800 mg/kg AMPMAR 12,26,51
Ataxia ;Primary irritation (after topical application) Skin Rabbit LD50 1400 mg/kg AFDOAQ 16,3,52
Spastic paralysis with or without sensory change ;Muscle weakness ;Coma Intraperitoneal Rabbit LD50 400 mg/kg JIHTAB 29,85,47

FIGURE 4. 2,4-D IN DIALOG (continued)

Spastic paralysis with or without sensory change ;Muscle weakness ;Coma
Intravenous Rabbit LD50 400 mg/kg JIHTAB 29,85,47
* Oral Guinea pig LD50 469 mg/kg AJVRAH 15,622,54
Spastic paralysis with or without sensory change ;Muscle weakness ;Coma
Intraperitoneal Guinea pig LD50 666 mg/kg JIHTAB 29,85,47
* Oral Hamster LD50 500 mg/kg TXAPA9 48,A192,79
Gastritis ;Somnolence (general depressed activity) ;Fatty liver
degeneration Oral Chicken LD50 541 mg/kg AJVRAH 15,622,54
* Oral Mammal (species unspecified) LD50 375 mg/kg SCIEAS
165,465,69

OTHER MULTIPLE DOSE EFFECTS DATA:

Weight loss or decreased weight gain ; Oral Rat TDLo 13650
mg/kg/13W-C FAATDF 9,423,87
Muscle weakness ; Oral Rat TDLo 200 mg/kg/5W-I NTOTDY 5,331,83
Retinal changes ; Change in motor activity (specific assay) ; Oral Rat
TDLo 54750 mg/kg/1Y-C TOXID9 15,23,95
Changes in other cell count (unspecified) ; Weight loss or decreased
weight gain ; Death in the "U" date type field ; Oral Dog TDLo 700
mg/kg/90D-I AMIHBC 7,61,53
Changes in tubules ; Liver—Other changes ; Changes in serum composition
(e.g., TP, bilirubin, cholesterol) ; Oral Dog TDLo 1820
mg/kg/52W-C FAATDF 29,78,96
Changes in teeth and supporting structures ; Dermatitis, other (after
systemic exposure) ; Death in the "U" date type field ; Intravenous
Dog TDLo 300 mg/kg/6D-I JIHTAB 29,85,47

REVIEWS:

ACGIH TLV-TWA 10 mg/m³ 85INA8 6,375,91
IARC Cancer Review:Human Limited Evidence IMEMDT 41,357,86
IARC Cancer Review:Animal Inadequate Evidence IMEMDT 15,111,77
TOXICOLOGY REVIEW RREVAH 59,1,75
TOXICOLOGY REVIEW DTTIAF 80,485,73
TOXICOLOGY REVIEW RREVAH 56,107,75
TOXICOLOGY REVIEW ECMAAI 14,141,73
TOXICOLOGY REVIEW BIOGAL 40(2),44,74
TOXICOLOGY REVIEW HYSAAV 31(7-9),383,66

STANDARDS AND REGULATIONS:

EPA FIFRA 1988 PESTICIDE SUBJECT TO REGISTRATION OR RE REGISTRATION
FEREAC 54,7740,89
MSHA STANDARD-air TWA 10 mg/m³ DTLVS* 3,67,71
OSHA PEL (Gen Indu) 8H TWA 10 mg/m³ CFRGBR 29,1910.1000,94
OSHA PEL (Construc) 8H TWA 10 mg/m³ CFRGBR 29,1926.55,94
OSHA PEL (Shipyard) 8H TWA 10 mg/m³ CFRGBR 29,1915.1000,93
OSHA PEL (Fed Cont) 8H TWA 10 mg/m³ CFRGBR 41,50-204.50,94

FIGURE 4. 2,4-D IN DIALOG (continued)

OEL-AUSTRALIA TWA 10 mg/m³ JAN93
OEL-AUSTRIA TWA 10 mg/m³ JAN93
OEL-BELGIUM TWA 10 mg/m³ JAN93
OEL-DENMARK TWA 5 mg/m³ JAN93
OEL-FINLAND TWA 10 mg/m³;STEL 20 mg/m³;Skin JAN93
OEL-FRANCE TWA 10 mg/m³ JAN93
AOEL-GERMANY TWA 10 mg/m³ JAN93
OEL-HUNGARY TWA 1 mg/m³;STEL 2 mg/m³;Skin JAN93
OEL-THE NETHERLANDS TWA 10 mg/m³ JAN93
OEL-THE PHILIPPINES TWA 10 mg/m³ JAN93
OEL-POLAND TWA 7 mg/m³ JAN93
OEL-SWITZERLAND TWA 10 mg/m³;STEL 50 mg/m³ JAN93
OEL-THAILAND TWA 10 mg/m³ JAN93
OEL-TURKEY TWA 10 mg/m³ JAN93
OEL-UNITED KINGDOM TWA 10 mg/m³;STEL 20 mg/m³ JAN93
OEL IN BULGARIA COLOMBIA, JORDAN, KOREA check ACGIH TLV
OEL IN NEW ZEALAND SINGAPORE, VIETNAM check ACGIH TLV
NIOSH CRITERIA DOCUMENTS:
NIOSH REL TO 2,4 D-air:10H TWA 10 mg/m³ NIOSH* DHHS #92-100,92
NOHS 1974: HZD 24270; NIS 6; TNF 1132; NOS 8; TNE 6266
NOES 1983: HZD 24270; NIS 1; TNF 94; NOS 1; TNE 471

NTP, NIOSH, EPA STATUS:

EPA GENETOX PROGRAM 1988, Positive: In vivo cytogenetics-nonhuman bone marrow
EPA GENETOX PROGRAM 1988, Positive: In vitro cytogenetics-human lymphocyte
EPA GENETOX PROGRAM 1988, Positive: B subtilis rec assay; E coli polA without S9
EPA GENETOX PROGRAM 1988, Positive: V79 cell culture-gene mutation
EPA GENETOX PROGRAM 1988, Positive: S cerevisiae gene conversion
EPA GENETOX PROGRAM 1988, Negative: D melanogaster-whole sex chrom. loss
EPA GENETOX PROGRAM 1988, Negative: D melanogaster-nondisjunction
EPA GENETOX PROGRAM 1988, Negative: Histidine reversion-Ames test
EPA GENETOX PROGRAM 1988, Negative: D melanogaster Sex-linked lethal
EPA GENETOX PROGRAM 1988, Negative: In vitro UDS-human fibroblast; TRP reversion
EPA GENETOX PROGRAM 1988, Negative: S cerevisiae-homozygosis
EPA GENETOX PROGRAM 1988, Inconclusive: Carcinogenicity-mouse/rat; Mammalian micronucleus
EPA TSCA Section 8(b) CHEMICAL INVENTORY
EPA TSCA Section 8(d) unpublished health/safety studies
On EPA IRIS database
EPA TSCA TEST SUBMISSION (TSCATS) DATA BASE, JULY 1996
NIOSH Analytical Method, 1994: 2,4-D, 5001
NTP Carcinogenesis studies; on test (prechronic studies), May 1996

IRRITATION EFFECTS JOURNAL REFERENCES:

28ZPAK Sbornik Vysledku Toxikologickeho Vysetreni Latek A Pripravku, Marhold, J.V., Institut Pro Vychovu Vedoucicn Pracovniku Chemickeho Prumyclu Praha, Czechoslovakia, 1972

MUTATION EFFECTS JOURNAL REFERENCES:

CBINA8 Chemico-Biological Interactions. Elsevier Scientific Pub. Ireland Ltd., POB 85, Limerick, Ireland V.1- 1969-
CYGEDX Cytology and Genetics (English Translation). Translation of TGANAK. Allerton Press Inc., 150 Fifth Ave., New York, NY 10011 V.8-1974-
CYTOAN Cytologia. (Japan Pub. Trading Co. USA), 1255 Howard St., San Francisco, CA 94103 V.1- 1929-
ECBUDQ Ecological Bulletins. Editorial Service of FRN, Box 6710, S-11385, Stockholm, Sweden No.19- 1975-
EMMUEG Environmental and Molecular Mutagenesis. Alan R. Liss, Inc., 41 E. 11th St., New York, NY 10003 V.10- 1987-
ITCSAF In Vitro. Rockville, MD V.1-20, 1965-85. For publisher information, see ICDBEO.
JOHEA8 Journal of Heredity. American Genetic Assoc., 818 18th St., NW, Washington, DC 20006 V.5- 1914-
MILEDM Microbios Letters. Faculty Press, 88 Regent St., Cambridge, UK V.1- 1976-
MUREAV Mutation Research. Elsevier Science Pub. B.V., POB 211, 1000 AE Amsterdam, Netherlands V.1- 1964-
NTIS** National Technical Information Service. Springfield, VA 22161 Formerly U.S. Clearinghouse for Scientific & Technical Information.
PYTCAS Phytochemistry. An International Journal of Plant Biochemistry. Pergamon Press Inc., Maxwell House, Fairview Park, Elmsford, NY 10523 V.1- 1961-
TOLED5 Toxicology Letters. Elsevier Science Pub. B.V., POB 211, 1000 AE Amsterdam, Netherlands V.1- 1977-

REPRODUCTIVE EFFECTS JOURNAL REFERENCES:

AECTCV Archives of Environmental Contamination and Toxicology. Springer-Verlag New York, Inc., Service Center, 44 Hartz Way, Secaucus, NJ 07094 V.1- 1973-
BECTA6 Bulletin of Environmental Contamination and Toxicology. Springer-Verlag New York, Inc., Service Center, 44 Hartz Way, Secaucus, NJ 07094 V.1- 1966-
FCTXAV Food and Cosmetics Toxicology. London, UK V.1-19, 1963-81. For publisher information, see FCTOD7.
GISAAA Gigiena i Sanitariya. For English translation, see HYSAAV. V/O Mezhdunarodnaya Kniga, 113095 Moscow, USSR V.1- 1936-
NTIS** National Technical Information Service. Springfield, VA 22161 Formerly U.S. Clearinghouse for Scientific & Technical Information.

TCMUD8 Teratogenesis, Carcinogenesis, and Mutagenesis. Alan R. Liss, Inc., 41 E. 11th St., New York, NY 10003 V.1- 1980-
TXAPA9 Toxicology and Applied Pharmacology. Academic Press, Inc., 1 E. First St., Duluth, MN 55802 V.1- 1959-

TOXICITY EFFECTS JOURNAL REFERENCES:

AEHLAU Archives of Environmental Health. Heldref Pub., 4000 Albemarle St., NW, Washington, DC 20016 V.1- 1960-
AFDOAQ Quarterly Bulletin--Association of Food and Drug Officials of the United States. Denver, CO V.3-38, 1939-74.
AJVRAH American Journal of Veterinary Research. American Veterinary Medical Assoc., 930 N. Meacham Rd., Schaumburg, IL 60196 V.1- 1940-
AMPMAR Archives des Maladies Professionnelles de Medecine du Travail et de Securite Sociale. SPPIF, B.P.22, F-41353 Vineuil, France V.7- 1946-
ARPAQ Archives of Pathology. (Chicago, IL) V.5(3)-50 3, 1928-50; V.70-99, 1960-75. For publisher information, see APLMAS.
ARTODN Archives of Toxicology. Springer-Verlag, Heidelberger Pl. 3, D-1000 Berlin 33, Fed. Rep. Ger. V.32- 1974-
FMCHA2 Farm Chemicals Handbook. Meister Pub., 37841 Euclid Ave., Willoughy, OH 44094
JIHTAB Journal of Industrial Hygiene and Toxicology. Cambridge, MA V.18-31, 1936-49. For publisher information, see AEHLAU.
PAREAQ Pharmacological Reviews. Williams & Wilkins, 428 E. Preston St., Baltimore, MD 21202 V.1- 1949-
RPZHAW Roczniki Panstwowego Zakladu Higieny. Ars Polona, POB 1001, 00-068 Warsaw 1, Poland V.1- 1950-
SCIEAS Science. American Assoc. for the Advancement of Science, 1333 H St., NW, Washington, DC 20005 V.1- 1895-
TXAPA9 Toxicology and Applied Pharmacology. Academic Press, Inc., 1 E. First St., Duluth, MN 55802 V.1- 1959-
WRPCA2 World Review of Pest Control. London, UK V.1-10, 1962-71. Discontinued.

OTHER MULTIPLE DOSE EFFECTS JOURNAL REFERENCES:

AMIHBC AMA Archives of Industrial Hygiene and Occupational Medicine. Chicago, IL V.2-10, 1950-54. For publisher information, see AEHLAU.
FAATDF Fundamental and Applied Toxicology. Academic Press, Inc., 1 E. First St., Duluth, MN 55802 V.1- 1981-
JIHTAB Journal of Industrial Hygiene and Toxicology. Cambridge, MA V.18-31, 1936-49. For publisher information, see AEHLAU.
NTOTDY Neurobehavioral Toxicology and Teratology. Fayetteville, NY V.3-8, 1981-86. For publisher information, see NETEEC.
TOXID9 Toxicologist. Soc. of Toxicology, Inc., 475 Wolf Ledge Parkway, Akron, OH 44311 V.1- 1981-

FIGURE 4. 2,4-D IN DIALOG (continued)

REVIEWS JOURNAL REFERENCES:

- BIOGAL** Biologico. Instituto Biologica, Av. Cons. Rodriques Alves, 1252, CEP 04014, Sao Paulo, Brazil V.1- 1935-
- DTLIAF** Deutsche Tieraerztliche Wochenschrift. Hanover, Fed. Rep. Ger. V.1-77, 1893-1970.
- ECMAAI** Economie et Medecine Animales. Paris, France V.1-17, 1960-76. Discontinued.
- HYSAAV** Hygiene and Sanitation (USSR). English translation of GISAAA. Springfield, VA 1964-71. Discontinued.
- IMEMDT** IARC Monographs on the Evaluation of Carcinogenic Risk of Chemicals to Man. WHO Publications Centre USA, 49 Sheridan Ave., Albany, NY 12210 V.1- 1972-
- RREVAH** Residue Reviews. Springer-Verlag New York, Inc., Service Center, 44 Hartz Way, Secaucus, NJ 07094 V.1- 1962-
- 85INA8** Documentation of the Threshold Limit Values and Biological Exposure Indices, 5th ed., Cincinnati, OH, American Conference of Governmental Industrial Hygienists, Inc., 1986

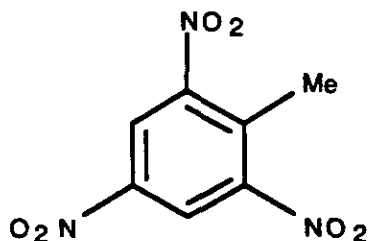
STANDARDS & REGULATIONS JOURNAL REFERENCES:

- CFRGBR** Code of Federal Regulations. U.S. Government Printing Office, Supt. of Documents, Washington, DC 20402
- DTLVS*** Documentation of Threshold Limit Values for Substances in Workroom Air. For publisher information, see 85INA8.
- FEREAC** Federal Register. U.S. Government Printing Office, Supt. of Documents, Washington, DC 20402 V.1- 1936-

DATA PRESENT: Irritation Effects; Mutation Effects; Reproductive Effects; Toxicity Effects; Human Toxicity Effects; Other Multiple Dose Effects; Reviews; Standards and Regulations; NIOSH Criteria Documents; NTP, NIOSH, EPA Status

FIGURE 5. TNT ON CAS/STN

CAS Registry Number (RN): 118-96-7 RTECS
 RTECS Number (RTN): XU0175000
 Molecular Formula (MF): C7 H5 N3 O6
 Formula Weight (FW): 227.15
 Chemical Name (CN): Toluene, 2,4,6-trinitro-
 Benzene, 2-methyl-1,3,5-trinitro-; Entsufo-
 2-Methyl-1,3,5-trinitrobenzene; NCI-C56155;
 TNT; alpha-Tnt; TNT (OSHA); TNT, dry or wetted
 with <30% water, by weight (UN0209) (DOT);
 TNT-tolite (French); Tolit; Tolite;
 2,4,6-Trinitrotolueen (Dutch);
 Trinitrotoluene; Trinitrotoluene (UN0209)
 (DOT); Trinitrotoluene, wetted with not <30%
 water, by weight (UN1356) (DOT);
 s-Trinitrotoluene; sym-Trinitrotoluene;
 2,4,6-Trinitrotoluene (ACGIH:OSHA);
 s-Trinitrotoluol; sym-Trinitrotoluol;
 2,4,6-Trinitrotoluol (German); Tritol; Triton;
 Trojnitrotoluen (Polish); Trotyl; Trotyl oil;
 UN0209 (DOT); UN1356 (DOT);
 Class Identifier (CI): Agricultural Chemical; Tumorigen; Mutagen;
 Reproductive Effector; P; Primary Irritant
 Wiswesser Notation (WLN): WNR B1 CNW ENW
 Entry/Update Date (DATE): Oct 1996
 Character Count: 7600



IRRITATION DATA (IRR):

Route	Organism	Dose	Duration	Effect	Source
RTE	ORGN	DOSE	DUR	EFF	SO
skin	rabbit	500 mg	24H	Mild	NTIS** AD-B011-150

IRRITATION DATA REFERENCES:

NTIS** National Technical Information Service (Springfield, VA 22161)
 Formerly U.S. Clearinghouse for Scientific & Technical Information.

FIGURE 5. TNT IN CAS/STN (continued)

MUTATION DATA (MUT):

System SYS	Organism ORGN	Cell Type CELL	Dose DOSE	Source SO
mutation in microorganisms	Salmonella typhimurium		10 ug/pla te (+/-S9)	NTIS** AD-A080-14 6
body fluid assay	rat		50 mg/kg	MUREAV 262,167,91
mutation in mammalian somatic cells	mouse	lymphocyte	40 mg/L	CALEDQ 20,103,83

MUTATION DATA REFERENCES:

NTIS** National Technical Information Service (Springfield, VA 22161)
Formerly U.S. Clearinghouse for Scientific & Technical Information.
MUREAV Mutation Research (Elsevier Science Pub. B.V., POB 211, 1000 AE
Amsterdam, Netherlands) V.1- 1964-
CALEDQ Cancer Letters (Shannon, Ireland) (Elsevier Scientific Pub.
Ireland Ltd., POB 85, Limerick, Ireland) V.1- 1975-

REPRODUCTIVE EFFECTS DATA (REP):

Effect EFF	Route RTE	Organism ORGN	Dose DOSE	Duration DUR	Source SO
T02	oral	rat	TDLo 5376 mg/kg	28D male	JTEHD6 9,565,82

REPRODUCTIVE EFFECTS REFERENCES:

JTEHD6 Journal of Toxicology and Environmental Health (Hemisphere Pub.,
1025 Vermont Ave., NW, Washington, DC 20005) V.1- 1975/76-

FIGURE 5. TNT IN CAS/STN (continued)

TOXICITY DATA (TOX):

Effect EFF	Route RTE	Organism ORGN	Dose DOSE	Source SO
F08;J24;K30	oral	human	LDLo 28 g/kg	34ZIAG -,610,69
F07;F11;F12	oral	rat	LD50 795 mg/kg	JTEHD6 9,565,82
F07;F11;F12	oral	mouse	LD50 660 mg/kg	JTEHD6 9,565,82
J22;J24;R01	oral	cat	LDLo 1850 mg/kg	MRCSAB 58,32,21
J22;J24;R01	subcutaneous	cat	LDLo 200 mg/kg	MRCSAB 58,32,21
F12;K12;J24	oral	rabbit	LDLo 500 mg/kg	MRCSAB 58,32,21
F12;K12;J24	subcutaneous	rabbit	LDLo 500 mg/kg	MRCSAB 58,32,21

TOXICITY DATA REFERENCES:

34ZIAG "Toxicology of Drugs and Chemicals," Deichmann, W.B., New York, Academic Press, Inc., 1969
 JTEHD6 Journal of Toxicology and Environmental Health (Hemisphere Pub., 1025 Vermont Ave., NW, Washington, DC 20005) V.1- 1975/76-
 MRCSAB Special Report Series--Medical Research Council (United Kingdom) (Her Majesty's Stationery Office, P.O. Box 569, London SE1 9NH, UK) No.1- 1915-

CANCER REVIEW (CREV):

IARC Cancer Review:Animal Inadequate Evidence IMEMDT 65,449,96
 IARC Cancer Review:Human Inadequate Evidence IMEMDT 65,449,96
 IARC Cancer Review:Group 3 IMEMDT 65,449,96

CANCER REVIEW REFERENCES:

IMEMDT IARC Monographs on the Evaluation of Carcinogenic Risk of Chemicals to Man (WHO Publications Centre USA, 49 Sheridan Ave., Albany, NY 12210) V.1- 1972-

TOXICOLOGY REVIEW (TREV):

TOXICOLOGY REVIEW NTIS** AD778-725
 TOXICOLOGY REVIEW CRTXB2 1(1),93,71
 TOXICOLOGY REVIEW PAREAQ 4,1,52

TOXICOLOGY REVIEW REFERENCES:

NTIS** National Technical Information Service (Springfield, VA 22161) Formerly U.S. Clearinghouse for Scientific & Technical Information.

CRTXB2 CRC Critical Reviews in Toxicology (CRC Press, Inc., 2000 Corporate Blvd., NW, Boca Raton, FL 33431) V.1- 1971-
 PAREAQ Pharmacological Reviews (Williams & Wilkins, 428 E. Preston St., Baltimore, MD 21202) V.1- 1949-

FIGURE 5. TNT IN CAS/STN (continued)

THRESHOLD LIMIT VALUE (TLV):

ACGIH TLV-TWA 0.5 mg/m³ (skin) 85INA8 6,1652,91

THRESHOLD LIMIT VALUE REFERENCES:

85INA8 "Documentation of the Threshold Limit Values and Biological Exposure Indices," 5th ed., Cincinnati, OH, American Conference of Governmental Industrial Hygienists, Inc., 1986

STANDARD AND REGULATIONS (SREG):

DOT-HAZARD:EXPLOSIVE 1.1D; LABEL:EXPLOSIVE 1.1D (UN0209) CFRGBR 49,172.101,92
DOT-HAZARD:4.1; LABEL:FLAMMABLE SOLID (UN1356) CFRGBR 49,172.101,92
MSHA STANDARD-air:TWA 0.2 ppm (0.5 mg/m³) (skin) DTLVS* 3,270,71
OSHA PEL (Gen Indu):8H TWA 1.50 mg/m³ (skin) CFRGBR 29,1910.1000,94
OSHA PEL (Construc):8H TWA 1.50 mg/m³ (skin) CFRGBR 29,1926.55,94
OSHA PEL (Shipyard):8H TWA 1.50 mg/m³ (skin) CFRGBR 29,1915.1000,93
OSHA PEL (Fed Cont):8H TWA 1.50 mg/m³ (skin) CFRGBR 41,50-204.50,94
OEL-ARAB Republic of Egypt:TWA 0.5 mg/m³ JAN93
OEL-AUSTRALIA:TWA 0.5 mg/m³;Skin JAN93
OEL-BELGIUM:TWA 0.5 mg/m³;Skin JAN93
OEL-DENMARK:STEL 0.5 mg/m³;Skin JAN93
OEL-FINLAND:TWA 0.5 mg/m³;STEL 3 mg/m³;Skin JAN93
OEL-FRANCE:TWA 0.5 mg/m³;Skin JAN93
OEL-GERMANY:TWA 0.01 ppm (0.1 mg/m³);Skin;Carcinogen JAN93
OEL-HUNGARY:TWA 0.3 mg/m³;STEL 0.5 mg/m³;Skin JAN93
OEL-THE NETHERLANDS:TWA 0.5 mg/m³;Skin JAN93
OEL-THE PHILIPPINES:TWA 1.5 mg/m³;Skin JAN93
OEL-RUSSIA:TWA 0.1 mg/m³;STEL 0.5 mg/m³;Skin JAN93
OEL-SWITZERLAND:TWA 0.01 ppm (0.1 mg/m³);STEL 0.02 ppm;Skin JAN93
OEL-TURKEY:TWA 1.5 mg/m³;Skin JAN93
OEL-UNITED KINGDOM:TWA 0.5 mg/m³;STEL 0.5 mg/m³ JAN93
OEL IN BULGARIA, COLOMBIA, JORDAN, KOREA check ACGIH TLV
OEL IN NEW ZEALAND, SINGAPORE, VIETNAM check ACGIH TLV

STANDARDS AND REGULATIONS REFERENCES:

CFRGBR Code of Federal Regulations (U.S. Government Printing Office, Supt. of Documents, Washington, DC 20402)

DTLVS* "Documentation of Threshold Limit Values for Substances in Workroom Air." For publisher information, see 85INA8.

NIOSH RECOMMENDATIONS (NREC):

NIOSH REL TO 2,4,6-TRINITROTOLUENE-air:10H TWA 0.5 mg/m³ (Sk) NIOSH* DHHS #92-100,92

NATIONAL OCCUPATIONAL SURVEY (SURV):

NOES 1983: HZD 74550; NIS 2; TNF 10; NOS 1; TNE 31

FEDERAL AGENCY STATUS (ASTA):

EPA GENETOX PROGRAM 1988, Positive: Histidine reversion-Ames test
EPA TSCA Section 8(b) CHEMICAL INVENTORY
EPA TSCA Section 8(d) unpublished health/safety studies
On EPA IRIS database
EPA TSCA TEST SUBMISSION (TSCATS) DATA BASE, OCTOBER 1996
OSHA ANALYTICAL METHOD #44