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Dangerous Properties of Industrial Materials

Sixth Edition

N. IRVING SAX

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VAN NOSTRAND REINHOLD COMPANY
NEW YORK CINCINNATI TORONTO LONDON MELBOURNE

145,165,167, VOL 4 S199*, VOL 5 175#. Reported in EPA TSCA Inventory, 1980.

THR: A hmn GIT, CNS. An exper ETA. HIGH ihl. See also mercury compounds. Reacts violently with acetylene, NH_3, BPI_2, Cl_2, ClO_2, CH_3N_3, Na_2C_2, nitromethane, (butyne diol + acid).

Incomp: Acetylenic compounds; ammonia; boron diiodophosphide; ethylene oxide; metals; methyl azide; methylsilane, oxygen; oxidants; tetracarbonylnickel, oxygen.

For further information see Vol. 1, No. 3 of *DPIM Report.*

MERCURY AMIDE CHLORIDE

CAS RN: 10124488 NIOSH #: OV 7020000
mf: ClH_2HgN; mw: 252.07

White pulverulent lumps or powder.

SYNS:

AMINOMERCURIC CHLORIDE
MERCURIC AMMONIUM CHLORIDE, SOLID
MERCURIC CHLORIDE, AMMONIATED
MERCURY AMINE CHLORIDE
MERCURY AMMONIATED
WHITE MERCURY PRECIPITATED
WHITE PRECIPITATE

TOXICITY DATA:

Aquatic Toxicity Rating: TLm96:under 1 ppm WQCHM* 3,-,74. *Toxicology Review:* SDGTB3 1(2),177,71; 27ZTAP 3,15,69. DOT: Poison B, Label: Poison FEREAC 41,57018,76. Occupational Exposure to Inorganic Mercury recm std: Air: TWA 0.05 mg(Hg)/m3 NTIS**. Reported in EPA TSCA Inventory, 1980.

THR: A poison. See also mercury compounds.

Disaster Hazard: When heated to decomp it emits very tox fumes of Cl^-, NO_x and Hg.

MERCURY(II)-o-ARSENATE

CAS RN: 7784374 NIOSH #: OV 7040000
mf: $AsHO_4 \cdot Hg$; mw: 340.52

Yellow powder; mp: decomp. Insol in H_2O, sol in HCl or HNO_3.

SYN: MERCURIC ARSENATE

TOXICITY DATA: 3

Aquatic Toxicity Rating: TLm96:under 1 ppm WQCHM* 3,-,74. Occupational Exposure to Inorganic Mercury recm std: Air: TWA 0.05 mg(Hg)/m3 NTIS**. Occupational Exposure to Inorganic Arsenic recm std: Air: CL 2 ug/m3/15M NTIS**.

THR: A poison. See also mercury and arsenic compounds.

Disaster Hazard: When heated to decomp it emits very tox fumes of Hg and As.

MERCURY(I) AZIDE

mf: Hg_2N_6; mw: 485.22

THR: Explodes on heating in air. HIGH tox. See also azides, mercury compounds.

Disaster Hazard: When heated to decomp it emits very tox fumes of NO_x and Hg.

MERCURY(II) AZIDE

mf: HgN_6; mw: 284.65

THR: High friction sensitivity; brisance on explosion. HIGH tox. See also mercury compounds, azides.

Disaster Hazard: When heated to decomp it emits very tox fumes of Hg and NO_x.

MERCURY(II) BENZOATE

CAS RN: 583153 NIOSH #: OV 7060000
mf: $C_{14}H_{10}O_4 \cdot Hg$; mw: 442.83

White crystalline powder; odorless. mp: 165°. Very sol in NaCl soln; slightly sol in alc. Protect from light.

SYNS:

MERCURIC BENZOATE
MERCURIC BENZOATE, SOLID (DOT)

TOXICITY DATA: 3

Aquatic Toxicity Rating: TLm96:under 1 ppm WQCHM* 3,-,74. DOT: Poison B, Label: Poison FEREAC 41,57018,76. Occupational Exposure to Inorganic Mercury recm std: Air: TWA 0.05 mg(Hg)/m3 NTIS**.

THR: A poison. See also mercury compounds.

Disaster Hazard: When heated to decomp it emits toxic fumes of Hg.

MERCURY(I) BROMIDE (1:1)

CAS RN: 10031182 NIOSH #: OV 7410000
mf: BrHg; mw: 280.50

White-yellow tetrg cryst or powder; odorless. d: 7.307; vap d: 19.3. Darkens on exposure to light. Sublimes @ approx 390° (decomp); Insol in H_2O, alc, ether; decomp by hot HCl or alkali bromides. Protect from light.

SYN: MERCUROUS BROMIDE, SOLID (DOT)

TOXICITY DATA: 3

Aquatic Toxicity Rating: TLm96:under 1 ppm WQCHM* 3,-,74. DOT: Poison B, Label: Poison FEREAC 41,57018,76. Occupational Exposure to Inorganic Mercury recm std: Air: TWA 0.05 mg(Hg)/m3 NTIS**.

THR: A poison. See also mercury compounds and bromides.

Disaster Hazard: When heated to decomp it emits very tox fumes of Br^- and Hg.

MERCURY(II) BROMIDE (1:2)

CAS RN: 7789471 NIOSH #: OV 7415000
mf: Br_2Hg; mw: 360.41

White crystals or cryst powder. Sensitive to light; mp: 237°; bp: 322° (sublimes); d: 6.109 @ 25°; vap press: mm @ 136.5°; sublimes @ higher temp; very sol in hot alc, methanol, HCl, HBr, alkali bromide solns; slightly sol in chloroform.

SYNS:

MERCURIC BROMIDE
MERCURIC BROMIDE, SOLID (DOT)

SYN: MERCURY NUCLEATE, SOLID (DOT)

TOXICITY DATA: 3

DOT: Poison B, Label: Poison FEREAC 41,57018,76. Occupational Exposure to Inorganic Mercury recm std: Air: TWA 0.05 mg(Hg)/m3 NTIS**.

THR: A poison. See also mercury compounds.

Disaster Hazard: When heated to decomp it emits tox fumes of Hg.

MERCUROPHEN

CAS RN: 17140737 NIOSH #: OW 4550000

mf: $C_6H_4HgNO_4 \cdot Na$; mw: 377.70

Brick-red odorless powder. Sol in hot H_2O.

TOXICITY DATA: 3	CODEN:
[illegible]-rat LDLo:8 mg/kg	12VXA5 8,661,68
[illegible]-rat LDLo:12 mg/kg	12VXA5 8,661,68
[illegible]-rbt LDLo:4 mg/kg	12VXA5 8,661,68

Occupational Exposure to Inorganic Mercury recm std: Air: TWA 0.05 mg(Hg)/m3 NTIS**.

THR: HIGH ivn, ims. See also mercury compounds. Poison.

Disaster Hazard: When heated to decomp it emits very tox fumes of NO_x and Hg vapors.

MERCUROPHYLLINE

CAS RN: 8012348 NIOSH #: OV 8650000

SYNS:

MERCUPURIN MERCUZANTHIN

TOXICITY DATA: 3-2	CODEN:
[illegible]-hmn TDLo:28 mg/kg:CNS	JAMAAP 117,1806,41
[illegible]-[illegible] LD50:163 mg(Hg)/kg	JPETAB 105,336,52
[illegible]-[illegible] LD50:1410 mg/kg	JPETAB 99,149,50
[illegible]-cat LDLo:250 mg/kg	JPETAB 99,149,50
[illegible]-rbt LDLo:177 mg/kg	JPETAB 99,149,50

Occupational Exposure to Inorganic Mercury recm std: Air: TWA 0.05 mg(Hg)/m3 NTIS**.

THR: A hmn CNS. HIGH scu, ivn. MOD ivn. See also mercury compounds.

Disaster Hazard: When heated to decomp it emits tox fumes of Hg.

MERCUROUS CHLORIDE

CAS RN: 7546307 NIOSH #: OV 8750000

mf: Cl_2Hg_2; mw: 472.09

White, odorless, tasteless, heavy powder or crystals. Sunlight causes it to decomp into mercuric chloride and metallic Hg. Insol in H_2O, alc and ether. Protect from light. Sol @ 400°; d: 7.150.

SYNS:

MERCURY(I) CHLORIDE MERCUROCHLORIDE (DUTCH)
[illegible]764 MERCURY MONOCHLORIDE
[illegible]OME MERCURY PROTOCHLORIDE
[illegible]OME [illegible]ANO (ITALIAN) MILD MERCURY CHLORIDE
[illegible] MERCUREUX QUECKSILBER(I)-CHLORID (GERMAN)
[illegible] MERCUROSO (ITALIAN) SUBCHLORIDE OF MERCURY
[illegible]OME (GERMAN)

TOXICITY DATA: 3	CODEN:
mrc-bcs 50 mmol/L	MUREAV 77,109,80
orl-rat LD50:210 mg/kg	WRPCA2 9,119,70

Toxicology Review: SDGTB3 1(2),177,71; RREVAH 42,103,72; 27ZTAP 3,91,69. Occupational Exposure to Inorganic Mercury recm std: Air: TWA 0.05 mg(Hg)/m3 NTIS**. Reported in EPA TSCA Inventory, 1980.

THR: MUT data. HIGH orl. See also mercury compounds.

Disaster Hazard: When heated to decomp it emits very tox fumes of Cl^- and Hg.

Human Tox: Excessive doses may cause Hg poisoning.

Antidote: BAL (Dimercaprol). If laxation from oral mercurous chloride should not occur, saline laxative must be administered to prevent possibility of Hg poisoning.

Med Incomp: Bromides, iodides, alkali chlorides, sulfates, sulfites, carbonates, hydroxides, lime water, acacia, ammonia, golden antimony sulfide, cocaine, cyanides, copper salts, hydrogen peroxide, iodine, iodoform, Pb salts, silver salts, soap, sulfides.

MERCURY

CAS RN: 7439976 NIOSH #: OV 4550000

af: Hg; aw: 200.59

Silvery liquid, metallic element. mp: −38.89°, bp: 356.9°, d: 13.546, vap. press: 1 mm @ 126.2°. vap press: @ 25° = 2×10^{-3} mm.

SYNS:

COLLOIDAL MERCURY NCI-C60399
KWIK (DUTCH) QUECKSILBER (GERMAN)
MERCURE (FRENCH) QUICK SILVER
MERCURIO (ITALIAN) RTEC (POLISH)
MERCURY, METALLIC (DOT)

TOXICITY DATA: 3	CODEN:
ihl-rat TCLo:890 ng/m3/24H (16W male)	GISAAA 45(3),72,80
ihl-rat TCLo:7440 ng/m3/24H (16W male)	GISAAA 45(3),72,80
ipr-rat TDLo:400 mg/kg/14D-I:ETA	ZEKBAI 61,511,57
ihl-wmn TCLo:150 ug/m3/46D:GIT	AEHLAU 33,186,78
ihl-wmn TCLo:150 ug/m3/46D:CNS	AEHLAU 33,186,78
ihl-rbt LCLo:29 mg/m3/30H	AMIHBC 7,19,53

TLV: Air: 0.05 mg(Hg)/m3 (skin) DTLVS* 4,254,80. *Toxicology Review:* AJOGAH 126(3),390,76; JTEHD6 2(3),491,77; TRBMAV 33(1),85,75; PHJOAV 213(5781),159,74; JDSCAE 58(12),1767,75; CPEDAM 13,783,74; QURBAW 7(1),75,74; AEMBAP 48,463,74; JAVMA4 164(3),277,74; 31ZNAA 2,365,73; AEMBAP 40,239,73; CTOXAO 5(2),151,72; BIOGAL 41(7),208,75; ADTEAS 5,51,72; RREVAH 42,103,72; FOREAE 7,313,42; NISIA9 27(9),942,74; MIBUBI 9(4),321,75; STEVA8 2(4),341,74; ENVRAL 13,36,77; 85CVA2 5,63,70; JOCMA7 2,337,60; PEXTAR 12,102,69; PDTNBH 6,204,77.

OSHA Standard: Air: CL 1 mg/10m3 (SCP-N) FEREAC 39,23540,74. DOT: ORM-B, Label: None FEREAC 41,57018,76. Occupational Exposure to Inorganic Mercury recm std: Air: TWA 0.05 mg(Hg)/m3 NTIS**. "NIOSH Manual of Analytical Methods" VOL 1

Disaster Hazard: When heated to decomp it emits tox fumes of Se.

SELENIOUS ACID

CAS RN: 7783008 NIOSH #: VS 7175000
mf: H_2O_3Se; mw: 128.98

Transparent colorless crystals; mp: decomp; d: 3.004 @ 15°/4°; vap press: 2 mm @ 15°. Very sol in alc; insol in ammonia.

TOXICITY DATA: 3	CODEN:
orl-rat LDLo:25 mg/kg	NCNSA6 5,28,53
ipr-rat LDLo:10 mg/kg	NCNSA6 5,28,53
ivn-mus LD50:11 mg/kg	CSLNX* NX#05656

OSHA Standard: Air: TWA 200 ug(Se)/m3 (SCP-X) FEREAC 39,23540,74. Reported in EPA TSCA Inventory, 1980.

THR: HIGH orl, ipr, ivn. See also selenium.

Disaster Hazard: When heated to decomp it emits tox fumes of Se.

SELENIUM

CAS RN: 7782492 NIOSH #: VS 7700000
af: Se; aw: 78.96

Steel gray, non-metallic element; mp: 170°-217°; bp: 690°; d: 4.81-4.26; vap press: 1 mm @ 356°.

SYNS:

SELENIUM ALLOY	ELEMENTAL SELENIUM
SELENIUM BASE	SELEN (POLISH)
SELENIUM HOMOPOLYMER	SELENIUM DUST
C.I. 77805	

TOXICITY DATA: 3	CODEN:
orl-mus TDLo:134 mg/kg (MGN)	AEHLAU 23,102,71
orl-mus TDLo:480 mg/kg/60D-C:ETA	YMBUA7 11,368,60
ihl-rat LDLo:33 mg/kg/8H	AMIHBC 4,458,51
ivn-rat LD50:6 mg/kg	AMIHBC 4,458,51
unk-frg LDLo:3 mg/kg	PHREA7 23,305,43

TLV: Air: 0.2 mg/m3 (Se) DTLVS* 4,361,80.

Toxicology Review: CTOXAO 6(3),459,73; CTOXAO 5(2),175,72; 31ZNAA 4(3),271,76; JAVMA4 164(3),277,74; CTOXAO 5(2),151,72; IJMDAI 10(4),416,74; JAMAAP 116,562,41; CHREAY 28, 179,41; ADTEAS 5,51,72; PHREA7 23,305,43; FOREAE 7,313,42; KOTTAM 11(11),1300,75; 85CVA2 5,63,70; PEXTAR 12,102,69; BNYMAM 54,413,78; AMTODM 3,209,77. OSHA Standard: Air: TWA 200 ug(Se)/m3 (SCP-X) FEREAC 39,23540,74. "NIOSH Manual of Analytical Methods" VOL 1 124,181, VOL 3 S190. Reported in EPA TSCA Inventory, 1980.

THR: An exper ETA. HIGH ihl, ivn, unk. See also selenium compounds.

Disaster Hazard: When heated to decomp it emits tox fumes of Se; Can react violently with barium carbide, bromine pentafluoride, calcium carbide, chlorates, chlorine trifluoride, chromic oxide (CrO_3), fluorine, lithium carbide, lithium silicon (Li_6Si_2), nickel, nitric acid, sodium, nitrogen trichloride, oxygen, potassium, potassium bromate, rubidium carbide, zinc, silver bromate, strontium carbide, thorium carbide, uranium. For further information see Vol. 1, No. 3 of *DPIM Report.*

SELENIUM (COLLOIDAL)

CAS RN: 7782492 NIOSH #: VS 8310000

TOXICITY DATA: 3	CODEN:
ivn-rat LDLo:6 mg/kg	JPETAB 33,270,28

Reported in EPA TSCA Inventory, 1980.

THR: HIGH ivn. See also selenium and selenium compounds.

Disaster Hazard: When heated to decomp it emits tox fumes of Se.

SELENIUM COMPOUNDS

THR: HIGH via ivn and inhal routes. An exper carc. Selenium in small amounts is essential for normal growth of some animals. Deficiency or excess is associated with serious disease in livestock. Long-term exposure may be a cause of amyotrophic lateral sclerosis in hmns, just as it may cause "blind staggers" in cattle. Elemental selenium has low acute systemic toxicity, but dust or fumes can cause serious irr of the respiratory tract. Hydrogen selenide resembles other hydrides in being highly toxic, and selenium oxychloride is a vesicant. Some organoselenium compounds have the high toxicity of other organometals. Inorganic selenium compounds can cause dermatitis. Garlic odor of breath is a common symptom. Pallor, nervousness, depression and digestive disturbances have been reported in cases of chronic exposure. Selenium compounds are common air contaminants.

SELENIUM DIMETHYLDITHIOCARBAMATE

CAS RN: 144343 NIOSH #: VT 0780000
mf: $C_{12}H_{24}N_4S_8 \cdot Se$; mw: 559.84

Yellow powd, cryst; d: 1.58; M range: 140°-172°.

SYNS:

METHYL SELENAC	TETRAKIS(DIMETHYLCARBAMODITHIOATO-S,S')SELENIUM

TOXICITY DATA: 3 CODEN:

Carcinogenic Determination: Indefinite IARC** 12 161,76. *Toxicology Review:* 85CVA2 5,250,70. Reported in EPA TSCA Inventory, 1980.

THR: An exper ± CARC. See also selenium compounds and carbamates.

Disaster Hazard: When heated to decomp it emits very tox fumes of Se, SO_x and NO_x.

SELENIUM (IV) DIOXIDE (1:2)

CAS RN: 7446084 NIOSH #: VS 8575000
mf: O_2Se; mw: 110.96

White to slightly reddish, lustrous crystalline powder or