



DEFENSE LOGISTICS AGENCY
DEFENSE NATIONAL STOCKPILE CENTER
8725 JOHN J. KINGMAN ROAD, SUITE 3229
FT. BELVOIR, VIRGINIA 22060-6223

IN REPLY

REFER TO: DNSC-C

November 22, 2006

AMENDMENT NO. 011
TO DLA-FERROMANGANESE-003
SOLICITATION OF OFFERS
FOR HIGH CARBON FERROMANGANESE

The above referenced Solicitation for the sale of High Carbon Ferromanganese is hereby amended to schedule an offering for Fiscal Year 2007, revise the listing of available material, and update various sections of the Solicitation, as follows:

With the exception of this Amendment and Amendment No. 010 all prior Amendments to this Solicitation have been deleted.

Offerors should acknowledge receipt of this Amendment and Amendment No. 010 by signing in the space provided in each amendment and submitting a copy along with their offer.

I. Section A.1 Introduction (MAR 06)

Delete this section in its entirety and replace with the following:

A.1 INTRODUCTION (NOV 06)

- a.** The Defense Logistics Agency (DLA), Defense National Stockpile Center (DNSC), is soliciting offers for the sale of approximately 50,000 ST (bulk weight) of high carbon ferromanganese. This material is being offered for evaluation under Category U (unrestricted) and Category R (restricted-for export only). Up to 50% of the material offered for sale may be awarded under Category R. The offering will be held on **Wednesday, December 6, 2006 at 2:00 PM, local time, Ft. Belvoir, VA.** Offers must be received at the address in Section B.2.a by 2:00 PM, local time, Ft. Belvoir, VA. In the event that DNSC is closed at that time, offers for that day will be received at 2:00 PM, local time, Ft. Belvoir, VA on the next DNSC business day. The fax number for receipt of offers is 703-767-5541.

- b.** Offers to purchase material under this Solicitation may be made for unrestricted use (Category U) or for restricted use-for export only (Category R). Offerors submitting an offer for material for export only must complete the certification at **Section I.10 Export Certification (AUG 04)**. By submission of **Section I.10**, the Offeror certifies that any material awarded for export only will not be consumed in the United States of America, Mexico, or Canada.

Offers for material for unrestricted use and for restricted use-export only will be evaluated separately. See **Section B.8**. Offerors awarded material for export use will be required to furnish a copy of the Marine Bill of Lading documenting that shipment of the material took place to other than the United States of America, Mexico, or Canada.

- c. Handling and outloading will be by and at the expense of the Contractor. (See subsection F.1.a.)
- d. This Solicitation supersedes Solicitation of Offers for Ferromanganese, DLA-FERROMANGANESE-001, which is hereby cancelled in its entirety.

2. Section A.2 Description (JAN 95), paragraph a.

Delete this paragraph in its entirety and replace with the following:

- a. The high carbon ferromanganese, Grade B, is stored outside in piles located at New Haven, IN, Curtis Bay, MD, and Point Pleasant, WV. See sections I.2 and J.1 for additional information.

3. Section B.4 Unit Pricing – High Carbon Ferromanganese and Monthly Declaration (MAR 06), paragraph c., subsection (2)

Delete this subsection in its entirety and replace with the following:

- (2) For offers submitted for evaluation under **Category U** (unrestricted) the published quotation which establishes the base price for a pricing formula shall be one of the following: Platts Metals Week Ferromanganese MW US Standard 78% S/gt or Ryan's Notes Ferrous and Nonferrous News and Prices for Ferromanganese RN 78% Imported NA Transaction.

For offers submitted for evaluation under **Category R** (restricted-for export only) the published quotation which establishes the base price for a pricing formula shall be Platts Metals Week Ferromanganese MW US Standard 78% S/gt.

The remainder of **Section B.4**, as amended by Amendment No. 010, remains unchanged.

4. Section F.1 Request for Shipment, paragraph e.

Delete this paragraph in its entirety and replace with the following:

- e. The Contractor, its agents and employees shall comply with all applicable rules at the storage depot; Federal, state and local load limitations; and all safety, health, and environmental requirements, including the Environmental Safety and Occupational Health Policy of the Defense National Stockpile Center. See also Section **F.8 Environmental Policy (NOV 05)**.

5. Section F.3 Weighing (APR 02)

Delete this section in its entirety and replace with the following:

F.3 Weighing (APR 06)

- a. Conveyance (truck, van, or railroad cars as applicable by location) shall be light (tare) and heavy weighed (gross), with the tare weight of the conveyance deducted to arrive at the net weight of the material. The stenciled tare weight of a railroad car and the actual tare weight of trucks or vans shall be used. Weighing shall be done by and at the expense of the contractor when public or rail scales are used. All weighing shall be witnessed by a Government representative, with the exception of weighing on railroad scales which will be witnessed by the railroad. Weighing shall be done on the nearest railroad scale or the depot truck scale, if available. If the depot truck scale is not available, then weighing shall be done on the nearest state certified public truck scale.
- b. A Government representative shall certify the correctness of the weighing method and that the truck scales have been inspected and certified. If the depot truck scale is used for weighing, the Government will provide the certified scale tickets. If a public truck scale is used for weighing, the Contractor or its agent will provide certified scale tickets. The scale tickets will be provided by the Government or the Contractor or its agent, as applicable, within ten working days after the entire requested release quantity has been shipped, or at the end of each week's shipment, whichever is sooner.
- c. Weight certificates shall be provided at the expense of the Government. The scale tickets shall be final for payment purposes.

6. Insert the following section into the Solicitation.

Section F.8 Environmental Policy (NOV 05)

The Contractor, its agents and employees shall comply with the Environmental Safety and Occupational Health Policy of the Defense National Stockpile Center while on storage facilities where stockpile material is stored. The Contractor shall review information on DNSC's Environmental Safety and Occupational Health Policy on the DNSC Website at <https://www.dnsc.dla.mil> by clicking on "I Am The Key."

7. Insert the following section into the Solicitation.

Section G.13 Applicable Law for Breach of Contract Claim (JUL 06)

United States law will apply to resolve any claim of breach of this contract.

8. Section I.2 Item Offer Page – DLA-FERROMANGANESE-003 (MAR 06)

Delete this section in its entirety and replace with the attached
Section I.2 Item Offer Page – Ferromanganese (NOV 06)

9. Insert the attached Section I.11 Disputes Agreement to Use Alternative Dispute Resolution (JUL 06).

This section should be submitted with an offer along with the other submittals identified in Section I.

10. Section J.1 Analysis (MAR 06)

Delete this section in its entirety and replace with the attached
Section J.1 Analysis – Ferromanganese (NOV 06)

11. Section J.2 Storage Locations (MAR 06)

Delete this section in its entirety and replace with the following information:

For DNSC Depot information including address, directions, hours of operation, accessibility, and contact information see the DNSC website at <https://www.dnsc.dla.mil/>.

12. Section J.5 Material Safety Data Sheet (JUN 05)

Delete this section in its entirety and replace with the attached
Section J.5 Material Safety Data Sheet (JUN 06)

- 13.** Except as provided herein, all other terms and conditions of DLA- FERROMANGANESE-003, as amended by Amendment No. 010 thereto, remain unchanged and in full force and effect.

Offerors shall acknowledge receipt of this Amendment by signing in the space provided below and returning a copy of this form along with their offer to:

ATTN: DNSC-R/Bid Custodian
Defense National Stockpile Center
8725 John J. Kingman Road
Suite 3229
Fort Belvoir, VA 22060-6223
Facsimile No. (703) 767-5541

Failure to acknowledge receipt of this Amendment may result in the offeror being considered ineligible for award.

NAME OF FIRM: _____

ADDRESS: _____

TELEPHONE: _____

FACSIMILE: _____

COMPLETED BY: _____

SIGNATURE: _____

TITLE: _____

E-MAIL ADDRESS: _____

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I.2 Item Offer Page – Ferromanganese (NOV 06)

Item Number	Location	Pile	Grade	Net Weight (ST)	Origin	Category (U or R)	Unit Price Per ST	Quantity (ST)	Total Offer Price
71	New Haven, IN	22	B	1,500.00	Canada		\$		\$
92	Curtis Bay, MD	24	B	825.00	Belgium		\$		\$
93	Curtis Bay, MD	25	B	36,196.00	Germany		\$		\$
91	Curtis Bay, MD	27	B	22,033.00	Japan		\$		\$
154	Curtis Bay, MD	154	B	5,623.00	Chile		\$		\$
94	Point Pleasant, WV	59	B	13,543.00	Domestic		\$		\$
95	Point Pleasant, WV	60	B	4,603.00	Domestic		\$		\$
Total:				84,323.00			\$		\$

I.11 Disputes: Agreement to Use Alternative Dispute Resolution (JUL 06)

- a.** The parties agree to negotiate with each other to try to resolve any disputes that may arise. If unassisted negotiations are unsuccessful, the parties will use alternative dispute resolution (ADR) techniques to try to resolve the dispute. Litigation will only be considered as a last resort when ADR is unsuccessful or has been documented by the party rejecting ADR to be inappropriate for resolving the dispute.
- b.** Before either party determines ADR inappropriate, that party must discuss the use of ADR with the other party. The documentation rejecting ADR must be signed by an official authorized to bind the contractor, or, for the Agency, by the contracting officer, and approved at a level above the contracting officer after consultation with the ADR Specialist and with legal counsel. Contractor personnel are also encouraged to include the ADR Specialist in their discussions with the contracting officer before determining ADR to be inappropriate.
- c.** If you wish to opt out of this clause, check here (___). Alternate wording may be negotiated with the contracting officer.

Section J.1 Analysis – Ferromanganese (NOV 06)

Item Number	Location	Pile	Grade	Origin	Mn	C	Si	P	S	Fe	As	P+As	Sn
71	NEW HAVEN, IN	022	B	CANADA	76.19%	6.63%	0.62%	0.27%					
92	BALTIMORE, MD	024	B	BELGIUM	76.30%	6.46%	0.74%	0.20%	0.00%	16.30%			
93	BALTIMORE, MD	025	B	W GERMANY	76.31%	6.69%	0.53%	0.19%	0.02%	16.26%			
91	BALTIMORE, MD	027	B	JAPAN	76.45%	6.60%	0.47%	0.23%	0.01%	16.24%			
154	BALTIMORE, MD	154	B	CHILE	76.24%	6.75%	0.39%	0.25%	0.01%	16.12%	0.040%		
94	POINT PLEASANT, WV	059	B	DOMESTIC	76.71%	6.65%	0.39%	0.19%	0.01%	15.44%	0.053%	0.239%	0.005%
95	POINT PLEASANT, WV	060	B	DOMESTIC	76.57%	6.55%	0.51%	0.19%	0.01%	15.44%	0.077%	0.270%	0.005%



MATERIAL SAFETY DATA SHEET

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

**DEFENSE LOGISTICS AGENCY
DEFENSE NATIONAL STOCKPILE CENTER
8725 JOHN J. KINGMAN ROAD
SUITE 3339
FORT BELVOIR, VA 22060-6223**

**EMERGENCY TELEPHONE NUMBER:
1-800-424-9300 (NORTH AMERICA)
1-703-527-3887 (INTERNATIONAL)**

SUBSTANCE: FERROMANGANESE, HIGH CARBON

**TRADE NAMES/SYNONYMS:
DLANA389**

**CREATION DATE: Jul 24 1992
REVISION DATE: Jun 15 2006**

2. COMPOSITION, INFORMATION ON INGREDIENTS

**COMPONENT: MANGANESE
CAS NUMBER: 7439-96-5
EC NUMBER (EINECS): 231-105-1
PERCENTAGE: 76.0-78.0**

**COMPONENT: CARBON
CAS NUMBER: 7440-44-0
EC NUMBER (EINECS): 231-153-3
PERCENTAGE: <7.50**

**COMPONENT: SILICON
CAS NUMBER: 7440-21-3
EC NUMBER (EINECS): 231-130-8
PERCENTAGE: <1.00**

**COMPONENT: PHOSPHORUS, WHITE
CAS NUMBER: 7723-14-0
EC NUMBER (EINECS): 231-768-7
PERCENTAGE: <0.95**

**COMPONENT: ARSENIC
CAS NUMBER: 7440-38-2**

EC NUMBER (EINECS): 231-148-6
PERCENTAGE: <0.90

COMPONENT: CHROMIUM
CAS NUMBER: 7440-47-3
EC NUMBER (EINECS): 231-157-5
PERCENTAGE: <0.50

COMPONENT: OXYGEN, COMPRESSED GAS
CAS NUMBER: 7782-44-7
EC NUMBER (EINECS): 231-956-9
PERCENTAGE: <0.50

COMPONENT: SULFUR
CAS NUMBER: 7704-34-9
EC NUMBER (EINECS): 231-722-6
PERCENTAGE: <0.05

COMPONENT: LEAD
CAS NUMBER: 7439-92-1
EC NUMBER (EINECS): 231-100-4
PERCENTAGE: <0.05

COMPONENT: TIN
CAS NUMBER: 7440-31-5
EC NUMBER (EINECS): 231-141-8
PERCENTAGE: <0.02

3. HAZARDS IDENTIFICATION

NFPA RATINGS (SCALE 0-4): HEALTH=1 FIRE=0 REACTIVITY=1



EMERGENCY OVERVIEW:

PHYSICAL DESCRIPTION: Hard, dense lumps.

MAJOR HEALTH HAZARDS: nerve damage, cancer hazard (in humans)

PHYSICAL HAZARDS: Negligible fire and explosion hazard in bulk form. Dust/air mixtures may ignite or explode. Contact with water or moist air may generate flammable and/or toxic gases.

POTENTIAL HEALTH EFFECTS:

INHALATION:

SHORT TERM EXPOSURE: irritation, changes in body temperature, nausea, vomiting, diarrhea, headache

LONG TERM EXPOSURE: irritation, loss of appetite, difficulty breathing, disorientation, difficulty speaking, sleep disturbances, emotional disturbances, hallucinations, mood swings, tremors, muscle cramps, loss of coordination, hearing loss, visual disturbances, lung damage, blood disorders, kidney damage, liver damage, nerve damage, cancer

SKIN CONTACT:

SHORT TERM EXPOSURE: irritation

LONG TERM EXPOSURE: irritation, cancer

EYE CONTACT:

SHORT TERM EXPOSURE: irritation

LONG TERM EXPOSURE: irritation

INGESTION:

SHORT TERM EXPOSURE: gastrointestinal irritation, nausea, vomiting, diarrhea

LONG TERM EXPOSURE: drowsiness, cancer

CARCINOGEN STATUS:

OSHA: Yes

NTP: Yes

IARC: Yes

4. FIRST AID MEASURES

INHALATION: If adverse effects occur, remove to uncontaminated area. Give artificial respiration if not breathing. Get immediate medical attention.

SKIN CONTACT: Wash skin with soap and water for at least 15 minutes while removing contaminated clothing and shoes. Get medical attention, if needed. Thoroughly clean and dry contaminated clothing and shoes before reuse.

EYE CONTACT: Flush eyes with plenty of water for at least 15 minutes. Then get immediate medical attention.

INGESTION: If a large amount is swallowed, get medical attention.

5. FIRE FIGHTING MEASURES

FIRE AND EXPLOSION HAZARDS: Negligible fire and explosion hazard in bulk form. Dust/air mixtures may ignite or explode.

EXTINGUISHING MEDIA: dolomite, dry powder for metal fires, dry sand, graphite, soda ash, sodium chloride

FIRE FIGHTING: Move container from fire area if it can be done without risk. Cool containers with water spray until well after the fire is out. Stay away from the ends of tanks. For fires in cargo or storage area: Cool containers with water from unmanned hose holder or monitor nozzles until well after fire is out. If this is impossible then take the following precautions: Keep unnecessary people away, isolate hazard area and deny entry. Let the fire burn. Use extinguishing agents appropriate for surrounding fire. Avoid inhalation of material or combustion by-products.

6. ACCIDENTAL RELEASE MEASURES

WATER RELEASE:

Subject to California Safe Drinking Water and Toxic Enforcement Act of 1986 (Proposition 65). Keep out of water supplies and sewers.

OCCUPATIONAL RELEASE:

Collect spilled material in appropriate container for disposal. Notify Local Emergency Planning Committee and State Emergency Response Commission for release greater than or equal to RQ (U.S. SARA Section 304). If release occurs in the U.S. and is reportable under CERCLA Section 103, notify the National Response Center at (800)424-8802 (USA) or (202)426-2675 (USA).

7. HANDLING AND STORAGE

STORAGE: Store and handle in accordance with all current regulations and standards. See original container for storage recommendations. Keep separated from incompatible substances.

HANDLING: Use methods to minimize dust.

8. EXPOSURE CONTROLS, PERSONAL PROTECTION

EXPOSURE LIMITS:

MANGANESE:

MANGANESE AND COMPOUNDS (as Mn):

5 mg/m³ OSHA ceiling (metal) (fume) (compounds)

1 mg/m³ OSHA TWA (particulate) (vacated by 58 FR 35338, June 30, 1993)

3 mg/m³ OSHA STEL (particulate) (vacated by 58 FR 35338, June 30, 1993)

0.2 mg/m³ ACGIH TWA (metal and inorganic compounds)

1 mg/m³ NIOSH recommended TWA 10 hour(s) (metal) (fume) (compounds)

3 mg/m³ NIOSH recommended STEL (metal) (fume) (compounds)

0.5 mg/m³ DFG MAK (peak limitation category - I, with excursion factor of 1) (inhalable fraction) (metal and inorganic compounds)

0.5 mg/m³ UK WEL TWA (metal) (inorganic compounds)

0.5 mg/m³ UK WEL TWA (metal and inorganic compounds)

MEASUREMENT METHOD: NIOSH IV # 7300, 7301, 7303, 9102; OSHA # ID121, ID125G

ARSENIC:

10 ug/m³ OSHA TWA

0.01 mg/m³ ACGIH TWA

0.002 mg/m³ NIOSH recommended ceiling 15 minute(s)

0.1 mg/m³ UK WEL TWA

MEASUREMENT METHOD: NIOSH IV # 7300, 7301, 7303, 7900, 9102; OSHA ID105

VENTILATION: Provide local exhaust ventilation system. Ensure compliance with applicable exposure limits.

EYE PROTECTION: Wear splash resistant safety goggles. Provide an emergency eye wash fountain and quick drench shower in the immediate work area.

CLOTHING: Wear appropriate chemical resistant clothing.

GLOVES: Wear appropriate chemical resistant gloves.

RESPIRATOR: Under conditions of frequent use or heavy exposure, respiratory protection may be needed. Respiratory protection is ranked in order from minimum to maximum. Consider warning properties before use.

Any dust, mist, and fume respirator.

Any air-purifying respirator with a high-efficiency particulate filter.

Any powered, air-purifying respirator with a dust, mist, and fume filter.

Any powered, air-purifying respirator with a high-efficiency particulate filter.

For Unknown Concentrations or Immediately Dangerous to Life or Health -

Any supplied-air respirator with full facepiece and operated in a pressure-demand or other positive-pressure mode in combination with a separate escape supply.

Any self-contained breathing apparatus with a full facepiece.

9. PHYSICAL AND CHEMICAL PROPERTIES

PHYSICAL DESCRIPTION: Hard, dense lumps.

BOILING POINT: Not applicable

MELTING POINT: Not available

VAPOR PRESSURE: Not applicable

VAPOR DENSITY: Not applicable

SPECIFIC GRAVITY: Not available

WATER SOLUBILITY: Not available

PH: Not applicable

VOLATILITY: Not applicable

ODOR THRESHOLD: Not available

EVAPORATION RATE: Not applicable

COEFFICIENT OF WATER/OIL DISTRIBUTION: Not available

10. STABILITY AND REACTIVITY

REACTIVITY: Stable at normal temperatures and pressure. Contact with water or moist air may form flammable and/or toxic gases or vapors.

CONDITIONS TO AVOID: None reported.

INCOMPATIBILITIES: metals, oxidizing materials, halogens, peroxides, combustible materials, acids, reducing agents

MANGANESE:

ALUMINUM (DUST): Forms explosive mixtures with air.

AMMONIUM NITRATE (FUSED): Violent or explosive reaction.

BROMINE PENTAFLUORIDE: Violent reaction and possible ignition.

CARBON DIOXIDE: Ignites.

CHLORINE: Ignites.

FLUORINE: Incandescent reaction.

HYDROGEN PEROXIDE: Violent decomposition and/or ignition.

NITRIC ACID: Incandescent reaction and feeble explosion.

NITROGEN DIOXIDE: Ignition.

OXIDIZERS (STRONG): Fire and explosion hazard.

PHOSPHORUS: Incandescent reaction when heated.

SULFUR DIOXIDE: Burns brilliantly on warming.

CARBON:

ALKALI METALS: Contact may result in an exothermic reaction with ignition or an explosion.

AMMONIUM NITRATE: Possible explosion when heated.

AMMONIUM PERCHLORATE: Possible explosion on heating.

BROMATES: Contact is likely to result in ignition or an explosion.

CALCIUM HYPOCHLORITE: Possible explosion on heating.

CHLORATES: Contact is likely to result in ignition or an explosion.

CHLORINE MONOXIDE: Explodes.

CHROMATES: Incompatible.

DICHLORINE OXIDE: Explosion reaction.

HALOGENS: Contact of carbon with any halogen is liable to result in ignition or an explosion.

INTERHALOGENS: Contact of carbon with any interhalogen is liable to result in ignition or an explosion.

IODATES: Contact is likely to result in ignition or an explosion.

IODINE PENTOXIDE: Explodes when warmed.

METAL NITRATES: Contact is likely to result in ignition or an explosion.

NITRIC ACID: Violent reaction.

NITROGEN OXIDE: Ignition with incandescence.

NITROGEN TRIFLUORIDE: Explosion at reduced temperatures.

OILS (UNSATURATED): Fire and explosion hazard.

OXIDES: Contact with many oxides is likely to result in ignition or an explosion.

OXIDIZERS (STRONG): Fire and explosion hazard.

OXOSALTS: Contact is likely to result in ignition or an explosion.

OXYGEN: May result in ignition or an explosion.

OXYGEN DIFLUORIDE: Possible explosion.

OZONE: Fire hazard.

PEROXIDES: Contact is likely to result in ignition or an explosion.

PEROXYFORMIC ACID: Violent oxidation.

PEROXYFUROIC ACID: Explosive decomposition.

POTASSIUM PERMANGANATE: Ignition on heating.

SODIUM SULFIDE: May undergo spontaneous heating.

TRIOXYGEN DIFLUORIDE: Ignition with possible explosion.

HAZARDOUS DECOMPOSITION:

Thermal decomposition products: miscellaneous decomposition products

POLYMERIZATION: Will not polymerize.

[11. TOXICOLOGICAL INFORMATION](#)

MANGANESE:

IRRITATION DATA:

500 mg/24 hour(s) skin-rabbit mild; 500 mg/24 hour(s) eyes-rabbit mild

TOXICITY DATA:

2300 ug/m³ inhalation-man TCLo; 9 gm/kg oral-rat LD₅₀; 3709 mg/m³/6 hour(s)-13 week(s) intermittent inhalation-rat TCLo; 180 mg/kg/30 day(s) intermittent intraperitoneal-rat TDLo; 210 ug/m³/5 year(s) intermittent inhalation-man TCLo; 0.3 mg/m³/5 hour(s)-26 week(s) intermittent inhalation-rat TCLo; 0.3 mg/m³/5 hour(s)-26 week(s) intermittent inhalation-monkey TCLo; 0.7 mg/m³/24 hour(s)-22 week(s) continuous inhalation-rat TCLo; 0.7 mg/m³/24 hour(s)-22 week(s) continuous inhalation-mouse TCLo; 250 mg/m³/1 year(s) intermittent inhalation-human TCLo; 0.5 mg/m³/39 week(s) intermittent inhalation-human TCLo; 200 mg/kg/20 day(s) intermittent oral-rat TDLo; 216 mg/kg/15 week(s) intermittent intraperitoneal-rat TDLo; 144 mg/kg/5 week(s) intermittent intraperitoneal-rat TDLo; 24 mg/kg/5 week(s) intermittent unreported-rat TDLo; 72 mg/kg/5 week(s) intermittent unreported-rat TDLo; 57.6 mg/kg/4 week(s) intermittent intraperitoneal-rat TDLo

ACUTE TOXICITY LEVEL:

Slightly Toxic: ingestion

TARGET ORGANS: nervous system

MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE: history of alcoholism, blood system disorders, liver disorders, nervous system disorders, respiratory disorders

TUMORIGENIC DATA:

400 mg/kg intramuscular-rat TDLo/1 year(s) intermittent

MUTAGENIC DATA:

dominant lethal test - rat intraperitoneal 25 mg/kg

REPRODUCTIVE EFFECTS DATA:

50 mg/kg oral-rat TDLo 20 day(s) post pregnancy continuous; 322.5 mg/kg oral-mouse TDLo 43 day(s) male; 1290 mg/kg oral-mouse TDLo 43 day(s) male

ADDITIONAL DATA: Symptoms may depend on a combination of contributing factors including genetic predisposition, age, nutrition, anemia or alcohol.

CARBON:

TOXICITY DATA:

>5 gm/kg oral-rat LD; >5 gm/kg intraperitoneal-rat LD; >5 gm/kg subcutaneous-rat LD; >5 gm/kg oral-mouse LD; >5 gm/kg intraperitoneal-mouse LD; >5 gm/kg subcutaneous-mouse LD; 440 mg/kg intravenous-mouse LD₅₀; >5 gm/kg oral-dog LD; >5 gm/kg intraperitoneal-dog LD; >5 gm/kg subcutaneous-dog LD

ACUTE TOXICITY LEVEL: Insufficient Data.

REPRODUCTIVE EFFECTS DATA:

167 mg/kg subcutaneous-rat TDLo 8 day(s) pregnant female continuous

ARSENIC:

TOXICITY DATA:

7857 mg/kg/55 year(s) oral-man TDLo; 4 mg/kg oral-child TDLo; 763 mg/kg oral-rat LD₅₀; 13390 ug/kg intraperitoneal-rat LD₅₀; 145 mg/kg oral-mouse LD₅₀; 46200 ug/kg intraperitoneal-mouse LD₅₀; 300 mg/kg subcutaneous-rabbit LDLo; 10 mg/kg intraperitoneal-guinea pig LDLo; 300 mg/kg subcutaneous-guinea pig LDLo; 763 mg/kg oral-rat LD₅₀; 144 mg/kg oral-mouse LD₅₀; 1000 mg/kg intraperitoneal-mouse LD₅₀; 1360 mg/kg/17 day(s) intermittent oral-rat TDLo; 280 mg/kg/4 week(s) continuous oral-mouse TDLo; 0.35 mg/kg/5 week(s) continuous oral-mouse TDLo

CARCINOGEN STATUS: OSHA: Carcinogen; NTP: Known Human Carcinogen; IARC: Human Sufficient Evidence, Animal Limited Evidence, Group 1; ACGIH: A1 -Confirmed Human Carcinogen

An increased incidence of urinary bladder, skin, lung, liver, and kidney cancer has been associated with inorganic arsenic compounds through medical treatment, contaminated drinking water, arsenical pesticide residues or occupational exposure. Cancers at other sites have also been reported, but a clear association has not been confirmed.

LOCAL EFFECTS:

Irritant: inhalation, skin, eye

ACUTE TOXICITY LEVEL:

Moderately Toxic: ingestion

TARGET ORGANS: immune system (sensitizer), nervous system

MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE: diabetes, heart or cardiovascular disorders, immune system disorders or allergies, kidney disorders, liver disorders, nervous system disorders, skin disorders and allergies

TUMORIGENIC DATA:

76 mg/kg oral-man TDLo/12 year(s) intermittent; 75 mg/kg implant-rabbit TDLo

MUTAGENIC DATA:

cytogenetic analysis - human unreported 4286 ug/kg; cytogenetic analysis - mouse oral 280 mg/kg 8 week(s); sister chromatid exchange - human oral 0.211 mg/L 15 year(s); cytogenetic analysis - human oral 0.211 mg/L 15 year(s); DNA damage - human lung 5 umol/L; cytogenetic analysis - human lung 5 umol/L; DNA damage - mouse fibroblast 5 nmol/L 24 hour(s)

REPRODUCTIVE EFFECTS DATA:

605 ug/kg oral-rat TDLo 35 week(s) pre pregnancy continuous; 580 ug/kg oral-rat TDLo 30 week(s) pre pregnancy/1-20 day(s) pregnant female continuous; 187 mg/kg oral-mouse TDLo 8-18 day(s) pregnant female continuous

HEALTH EFFECTS:

INHALATION:

ACUTE EXPOSURE:

MANGANESE: Dust or fumes may be irritating to the mucous membranes. Occupational exposure to dust or fumes has been reported to cause upper respiratory tract problems, black mucous membrane discharge from the nose, and neurological damage. Metal fume fever, an influenza-like illness, may occur due to the inhalation of freshly formed metal oxide particles sized below 1.5 microns and usually between 0.02-0.05 microns. Symptoms may be delayed 4-12 hours and begin with a sudden onset of thirst, and a sweet, metallic or foul taste in the mouth. Other symptoms may include upper respiratory tract irritation accompanied by coughing and a dryness of the mucous membranes, lassitude and a generalized feeling of malaise. Fever, chills, muscular pain, mild to severe headache, nausea, occasional vomiting, exaggerated mental activity, profuse sweating, excessive urination, diarrhea and prostration may also occur. Tolerance to fumes develops rapidly, but is quickly lost. All symptoms usually subside within 24-36 hours.

CARBON: Inhalation of dust may cause slight mucous membrane irritation.

CHRONIC EXPOSURE:

MANGANESE: If sufficient quantities of manganese dust or fumes are inhaled and absorbed, systemic poisoning known as "manganism", a Parkinsonian-like syndrome may occur. It is characterized initially by anorexia, asthenia, headache, insomnia or somnolence, irritability, restlessness, and spasm or pain in the muscles. Manganese psychosis may follow with uncontrollable behavior, unaccountable laughing or crying, visual hallucinations, confusion and euphoria. Sexual excitement followed by impotence may occur. These symptoms may disappear with the onset of true neurological manifestations of slow, slurred and irregular speech, monotonous tone, double vision, impaired hearing, difficulty with fine motor movements, and disturbances in gait and balance with frequent propulsion or retropulsion. Mask-like face, decreased movement of the eyelids and eyes and tremors of the upper extremities and head may also occur. Other signs and symptoms may include urinary bladder disturbances, excessive salivation and sweating, hematological changes, vasomotor disorders, decreased pulmonary function, kidney and possibly liver damage. Removal from exposure shortly after onset of symptoms usually results in improvement, although there may be residual disturbances in gait and speech. Once manganism is well established it becomes irreversible and progressive, but not fatal. An increased incidence of bronchitis and pneumonitis has been reported in studies of workers exposed to

manganese dust and fume, and although these effects have been confirmed by animal experiments, they may represent an aggravation of a pre-existing condition. Allergic diseases of the respiratory tract have also been reported in one study.

CARBON: Repeated or prolonged exposure may cause irritation and pulmonary disorders. Lung damage may result if sufficient exposure occurs.

SKIN CONTACT:

ACUTE EXPOSURE:

MANGANESE: 500 mg applied to the skin of rabbits caused mild irritation.

CARBON: Contact may cause irritation.

CHRONIC EXPOSURE:

MANGANESE: Sensitization has been reported in guinea pigs.

CARBON: Repeated or prolonged contact may cause mechanical irritation.

EYE CONTACT:

ACUTE EXPOSURE:

MANGANESE: Dust or fumes may be irritating to the eyes. 500 mg applied to the eyes of rabbits caused mild irritation.

CARBON: Contact with dust may cause mechanical irritation. May also cause conjunctivitis.

CHRONIC EXPOSURE:

MANGANESE: Fumes may cause conjunctivitis.

CARBON: Repeated or prolonged exposure may cause mechanical irritation.

INGESTION:

ACUTE EXPOSURE:

MANGANESE: Extremely large doses may cause gastrointestinal irritation and possibly systemic toxicity.

CARBON: Extremely large doses may produce gastrointestinal disturbances.

CHRONIC EXPOSURE:

MANGANESE: Manganese poisoning has been reported in persons drinking manganese-contaminated well water. Prolonged ingestion of manganese in water has produced lethargy, edema, and decreased movement of the eyes and eyelids.

CARBON: No data available.

12. ECOLOGICAL INFORMATION

Not available

13. DISPOSAL CONSIDERATIONS

Dispose in accordance with all applicable regulations.

14. TRANSPORT INFORMATION

U.S. DEPARTMENT OF TRANSPORTATION: No classification assigned.

CANADIAN TRANSPORTATION OF DANGEROUS GOODS: No classification assigned.

LAND TRANSPORT ADR: No classification assigned.

LAND TRANSPORT RID: No classification assigned.

AIR TRANSPORT IATA: No classification assigned.

AIR TRANSPORT ICAO: No classification assigned.

MARITIME TRANSPORT IMDG: No classification assigned.

15. REGULATORY INFORMATION

U.S. REGULATIONS:

CERCLA SECTIONS 102a/103 HAZARDOUS SUBSTANCES (40 CFR 302.4):

ARSENIC: 1 LBS RQ

PHOSPHORUS, WHITE: 1 LBS RQ

CHROMIUM: 5000 LBS RQ

LEAD: 10 LBS RQ (solid metal particles < 100 micrometer diameter (0.004 inches))

SARA TITLE III SECTION 302 EXTREMELY HAZARDOUS SUBSTANCES (40 CFR 355.30): Not regulated.

SARA TITLE III SECTION 304 EXTREMELY HAZARDOUS SUBSTANCES (40 CFR 355.40): Not regulated.

SARA TITLE III SARA SECTIONS 311/312 HAZARDOUS CATEGORIES (40 CFR 370.21):

ACUTE: No

CHRONIC: Yes

FIRE: No

REACTIVE: Yes

SUDDEN RELEASE: No

SARA TITLE III SECTION 313 (40 CFR 372.65):

ARSENIC

MANGANESE AND COMPOUNDS (as Mn)

OSHA PROCESS SAFETY (29CFR1910.119): Not regulated.

STATE REGULATIONS:

California Proposition 65:

Known to the state of California to cause the following:

ARSENIC

Cancer (Feb 27, 1987)

LEAD

Cancer (Oct 01, 1992)

Developmental toxicity (Feb 27, 1987)

Male reproductive toxicity (Feb 27, 1987)

Female reproductive toxicity (Feb 27, 1987)

LEAD COMPOUNDS

Cancer (Oct 01, 1992)

Developmental toxicity (Feb 27, 1987)

Male reproductive toxicity (Feb 27, 1987)

Female reproductive toxicity (Feb 27, 1987)

CANADIAN REGULATIONS:

WHMIS CLASSIFICATION: Not determined.

EUROPEAN REGULATIONS:

EC CLASSIFICATION (CALCULATED): Not determined.

NATIONAL INVENTORY STATUS:

U.S. INVENTORY (TSCA): Listed on inventory.

TSCA 12(b) EXPORT NOTIFICATION: Not listed.

16. OTHER INFORMATION

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