



Curtin Matheson Scientific, Inc.  
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WOOD DALE, IL 60191-1019

FISONS

# MATERIAL SAFETY DATA SHEET

MAIL TO: MICHIGAN STATE UNIV

RECEIVING DEPT.  
133 WEST SERVICE DR.

EAST LANSING, MI 48824

## SECTION 1 - NAME AND PRODUCT

### MANUFACTURER NAME AND ADDRESS

MANOSTAT CORP.  
519 EIGHTH AVE

NEW YORK NY 10018

EMERGENCY PHONE (212) 594-6262

### CHEMICAL NUMBER:

ITEM NUMBER: 0480616

VNDR CATLG NBR: 19-089-010

ENTRY DATE: 12-14-89

CHANGE DATE: 05-22-90

PO NUMBER: 003576-MAB

### COMMON NAME (ON LABEL)

CHROMERGE (IN WATER SOLUTION)

### CHEMICAL FAMILY

NOT GIVEN

### TRADE NAME & SYNONYMS

CHROMERGE (IN WATER SOLUTION)  
CHROMIC ANHYDRIDE  
CHROMIUM (VI) TRIOXIDE  
CHROMIUM TRIOXIDE (WATER SOL. CHROMIC ACID)

### CHEMICAL FORMULA

CR03

## SECTION 2 - HAZARDOUS INGREDIENTS

HAZARDOUS COMPONENT	CAS	% (WT)	TLV	PEL
CHROMIC ANHYDRIDE	1333-82-0	.00	NOT GIVEN	NOT GIVEN

PEL: Permissible Exposure Limit established by the Occupational Safety and Health Administration (OSHA).

TLV: Threshold Limit Value established by the American Conference of Governmental Industrial Hygienists, 1986-87.

### OTHER INGREDIENT INFORMATION

CHROMERGE (R) IS MADE UP OF CHROMIUM TRIOXIDE AND WATER AND IS PRIMARILY USED AS AN EFFECTIVE GLASS CLEANER. THE PRINCIPLE HAZARD OF CHROMERGE (R) IS THE POTENTIAL FOR EXPOSURE TO CHROMIUM TRIOXIDE WHICH IS A HIGHLY CORROSIVE CHEMICAL, SUSPECTED OF CAUSING LONG TERM HEALTH EFFECTS. BUT IT SHOULD BE NOTED THAT CHROMERGE (R) IS A DILUTE SOLUTION OF THIS CHEMICAL AND WITH APPROPRIATE HANDLING, POTENTIAL EXPOSURE TO CHROMIUM TRIOXIDE IS REDUCED.

## SECTION 3 - PHYSICAL DATA

<b>BOILING POINT</b> DECOMP AT 270 DEG C	<b>VOLATILE BY VOLUME (%)</b> N/A	<b>VAPOR PRESSURE</b> UNKNOWN
<b>MELTING POINT</b> 196 DEG C	<b>VAPOR DENSITY</b> (AIR=1) UNKNOWN	<b>SOLUBILITY IN WATER</b> YES
<b>EVAPORATION RATE (</b> N/A	<b>= 1)</b>	<b>SPECIFIC GRAVITY</b> SEE OTHER PHYSICAL DATA
<b>APPEARANCE AND ODOR</b> DARK BROWN, ODORLESS SOLUTION		

### OTHER PHYSICAL DATA

SPEC. GRAV.: (WATER=1)(OF PURE CHROMIUM TRIOXIDE): 2.67-2.82 (CHROMIUM TRIOXIDE IS HEAVIER THAN WATER). MOLECULAR WEIGHT (OF PURE CHROMIUM TRIOXIDE): 100.1. PURE CHROMIUM TRIOXIDE CRYSTALS ARE ODORLESS AND DARK PURPLISH TO RED IN COLOR. WHEN EXPOSED TO AIR, CRYSTALS WILL ABSORB MOISTURE FROM THE AIR AND BECOME A LIQUID.

## SECTION 4 - FIRE AND EXPLOSION DATA

**FLASH POINT**

WILL NOT BURN

**LOWER EXPLOSIVE LIMIT**

NOT GIVEN

**UPPER EXPLOSIVE LIMIT**

NOT GIVEN

**EXTINGUISHING MEDIA**

WATER

**UNUSUAL FIRE AND EXPLOSION HAZARDS**

WHILE CHROMERGE (R) IS A DILUTE SOLUTION OF CHROMIUM TRIOXIDE, THERE IS THE POTENTIAL FOR CONTAINERS TO EXPLODE WHEN INVOLVED IN A FIRE. DECOMPOSITION OF CHROMIUM TRIOXIDE, IN LARGE QUANTITIES OF CHROMERGE (R), WHEN UNDER EXTREME HEAT MAY PROVIDE ENOUGH OXYGEN GAS TO FEED THE SURROUNDING FIRE.

**SPECIAL FIRE FIGHTING PROCEDURES**

BECAUSE LABORATORIES USUALLY CONTAIN A VARIETY OF POTENTIALLY REACTIVE CHEMICALS, CAUTION SHOULD BE USED WHEN FIGHTING FIRES WITH WATER. FIRE FIGHTERS FIGHTING LABORATORY FIRES SHOULD WEAR SELF-CONTAINED BREATHING APPARATUS WITH A FULL FACEPIECE OPERATED IN PRESSURE-DEMAND OR OTHER POSITIVE PRESSURE MODE.

## SECTION 5 - HEALTH HAZARD DATA

**HEALTH HAZARDS (ACUTE & CHRONIC)**

ACUTE (SHORT-TERM) EXPOSURE: INHALATION: BECAUSE CHROMERGE (R) IS A DILUTE SOLUTION OF CHROMIUM TRIOXIDE AND WATER, THE POTENTIAL EXPOSURE TO CHROMIUM TRIOXIDE IS REDUCED. A SINGLE EXPOSURE TO A HIGH CONCENTRATION OF PURE CHROMIUM TRIOXIDE SPRAY OR MIST MAY SEVERELY DAMAGE DEEP LUNG STRUCTURES AND CAUSE MILD CONGESTION OF THE NASAL MEMBRANES. CHROMIUM TRIOXIDE IS VERY CORROSIVE TO THE MUCOUS MEMBRANES OF THE UPPER RESPIRATORY TRACT, INCLUDING LARYNX, AND MAY CAUSE OPEN WOUNDS OR ULCERS. IF SPRAY IS BREATHED IN, IT MAY CAUSE IRRITATION OF THE NASAL MUCOUS MEMBRANES WITH INFLAMMATION, PUS-LIKE DISCHARGE, FORMATION OF CRUSTS, AND SOME DIFFICULTY IN BREATHING. CONTINUED EXPOSURE MAY LEAD TO PAINLESS, LONG-LASTING ULCERS FORMING ON THE CARTILAGE OF THE NOSE AND CAN LEAD TO SKIN HOLES INSIDE THE NOSE BETWEEN THE NOSTRILS. AT THIS POINT, THE PERSON MAY SUFFER GREAT PAIN AND HAVE TO BREATHE THROUGH HIS MOUTH ONLY. SHORT-TERM EXPOSURE MAY ALSO CAUSE COUGHING, WHEEZING, HEADACHE, SHORTNESS OF BREATH, PAIN ON DEEP INHALATION, FEVER, AND WEIGHT LOSS. THROAT AND LUNG IRRITATION AND SWELLING MAY PERSIST AFTER THE OTHER SYMPTOMS HAVE SUBSIDED. SKIN: PURE CHROMIUM TRIOXIDE IS EXTREMELY CORROSIVE TO THE SKIN. SKIN CONTACT WITH THIS CHEMICAL WILL RESULT IN ULCERS COMMONLY CALLED "CHROME HOLES". THE ULCERS MOST OFTEN FORM AROUND FINGERNAILS, FINGERJOINTS, EYELIDS, AND SOMETIMES FOREARMS. THESE SORES ARE PARTICULARLY A PROBLEM WHEN THERE IS A CUT OR BREAK IN THE SKIN. THE SKIN ULCER IS ROUND, VERY DEEP, AND USUALLY DOES NOT SPREAD. THE CENTER OF THE HOLE IS COVERED WITH A CRUST OR SCAB. ULCERS ARE SLOW TO HEAL AND MAY LAST FOR SEVERAL MONTHS BUT

**PRIMARY ROUTES OF EXPOSURE**

EXPOSURE ROUTES (WAYS IN WHICH SOMEONE CAN COME IN CONTACT WITH THE CHEMICAL): THE MOST COMMON WAY A PERSON MAY BE EXPOSED TO CHROMERGE (R) IS THROUGH LIQUID ACCIDENTALLY BEING SPLASHED OR Poured ONTO THE SKIN OR INTO THE EYES. BREATHING IN MISTS DURING MIXING OR USE MAY ALSO OCCUR. SKIN CONTACT WITH PURE CHROMIUM TRIOXIDE IS REMOTELY POSSIBLE IF A CRUST OF CHROMIUM TRIOXIDE IS ALLOWED TO FORM AROUND THE TOP OF THE BOTTLE. TO PREVENT THIS, KEEP THE BOTTLE TIGHTLY CAPPED SO THAT THE WATER DOES NOT EVAPORATE FROM THE SOLUTION. PEOPLE ARE NOT LIKELY TO SWALLOW CHROMERGE (R) ON THE JOB.

**SIGNS AND SYMPTOMS OF EXPOSURE**

CHROMIUM TRIOXIDE IS VERY CORROSIVE TO THE SKIN AND THE LINING OF THE NOSE, THROAT, MOUTH, AND THE BRONCHIAL TUBES AND LUNGS. SKIN CONTACT WITH CHROMIUM TRIOXIDE MAY LEAD TO SKIN ULCERS KNOWN AS "CHROME HOLES". LONG-TERM EXPOSURE MAY CAUSE PERMANENT NOSE TISSUE DAMAGE, SKIN SENSITIZATION, LIVER DAMAGE, AND LUNG CONGESTION.

## SECTION 5 - HEALTH HAZARD DATA (CONTINUED)

**MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE**

EXTERNAL LESIONS MAY BE SCRUBBED WITH DILUTE SODIUM HYPOSULFITE SOLUTION (2%) OR TREATED WITH CALCIUM DISODIUM EDETATE OINTMENTS. OTHER SUGGESTED TREATMENT FOR SKIN ULCERS INCLUDE MILD OINTMENTS OR WET DRESSINGS WITH CITRIC OR TARTARIC ACID OR A 1% ALUMINUM ACETATE WET DRESSING. TO ASSIST IN REMOVING SCABS, USE EITHER WET DRESSINGS OF 5 TO 10% SODIUM CITRATE OR 10% CAEDTA OINTMENT. NEITHER BRITISH ANTILEWISITE (BAL) NOR CALCIUM SODIUM ETHYLENEDIAMINETETRAACETIC ACID (CANA2EDTA) APPEAR TO BE EFFECTIVE. INDIVIDUALS WITH PRE-EXISTING SKIN DISORDERS, ASTHMA, OR ALLERGIES MAY BE AT AN INCREASED RISK AND MORE AFFECTED BY EXPOSURE TO CHROMIUM TRIOXIDE. SYNERGISTIC EFFECTS: PURE CHROMIUM TRIOXIDE MAY WORK IN COMBINATION WITH BRONCHIAL INFECTION OR WITH SMOKING TO CAUSE LONG-TERM BRONCHIAL DISEASE.

**CARCINOGENICITY**

INDICATORS NOT GIVEN

NTP  Yes  NoIARC  Yes  NoOSHA  Yes  No

CHROMIUM TRIOXIDE IS A SUSPECTED HUMAN CARCINOGEN. \*\*\*\*\*EMERGENCY AND FIRST AID PROCEDURES\*\*\*\*\*: IN ALL CASES OF POISONING, FOLLOW THE STANDARD FIRST AID PROCEDURES WHERE POSSIBLE. CONTACT THE POISON CONTROL CENTER IN YOUR STATE OR OTHER QUALIFIED MEDICAL PERSONNEL FOR SPECIFIC PROCEDURES TO FOLLOW. WHENEVER TRANSPORTING A POISONED PERSON TO A MEDICAL FACILITY, BRING CONTAINER, LABEL OR OTHER INFO CONCERNING THE PRODUCT (WITHOUT DELAYING TRANSPORT) TO ASSIST MEDICAL PERSONNEL WITH DIAGNOSIS AND TREATMENT. NOTIFY YOUR HEALTH AND SAFETY OFFICER OF ANY POISONING INCIDENT. SEE NEXT SECTION TO SEE REST OF INFO.

**EMERGENCY AND FIRST AID PROCEDURES**

HERE ARE SOME GENERAL GUIDELINES IF YOU OR SOMEONE ELSE IS EXPOSED. TREATMENT MAY VARY BASED ON THE INDIVIDUAL CASE AND ON WHETHER CHROMERGE (R) OR CHROMERGE (R)- SULFURIC ACID WORKING SOLUTION WAS INVOLVED IN THE ACCIDENT, THEREFORE MEDICAL ATTENTION SHOULD BE SOUGHT AS SOON AS POSSIBLE. INHALATION ( IF VAPORS OR DUST ARE BREATHED IN): MOVE PERSON TO FRESH AIR. IF PERSON IS NOT BREATHING, BEGIN CPR. GET VICTIM TO A DOCTOR OR HOSPITAL IMMED. DERMAL (IF GETS ON SKIN): IF CHROMERGE (R) OR WORKING SOLUTION IS SPILLED OR SPLASHED ON SKIN, WASH IMMEDIATELY WITH SOAP AND WATER. IF CHROMERGE (R) GETS ON YOUR CLOTHES, REMOVE THEM IMMEDIATELY AND WASH THE SKIN AGAIN. CHECK WITH A DOCTOR OR HOSPITAL TO MAKE SURE THERE IS NO INJURY. EYES (IF GETS IN EYES): GENTLY WASH EYES IMMEDIATELY WITH LUKEWARM WATER FOR AT LEAST 15 MINUTES, BLINKING IS O.K., BUT EYES SHOULDN'T BE RUBBED OR KEPT CLOSED. DO NOT WEAR CONTACT LENSES WHILE USING CHROMERGE (R), BUT IF THEY ARE BEING WORN AT THE TIME OF EXPOSURE, CAREFULLY REMOVE THEM, IF POSSIBLE. GET VICTIM TO A DOCTOR OR HOSPITAL IMMEDIATELY. INGESTION (IF SWALLOWED): DO NOT MAKE VICTIM VOMIT. VOMITING WILL OFTEN OCCUR AUTOMATICALLY IF A LARGE AMOUNT HAS BEEN SWALLOWED. REGARDLESS OF WHETHER THE INDIVIDUAL VOMITS OR NOT, GET THEM TO A DOCTOR IMMED.

**THRESHOLD LIMITS / TOXICITY DATA**

TOXIC EFFECTS LEVELS: THE LOWEST AMOUNT OF PURE CHROMIUM TRIOXIDE THAT HAS CAUSED A TOXIC OR POISONING EFFECT IN HUMANS IS 100 MICROGRAMS/M3 BREATHED IN CONTINUOUSLY FOR 3 YEARS.  
WORKPLACE EXPOSURE LIMITS: OSHA: 0.05 MG/M3 AS CHROMIUM (VI), TIME WEIGHTED AVERAGE (TWA) OVER 8-HOUR WORKSHIFT.; NIOSH: 0.05 MG/M3 AS CHROMIUM TRIOXIDE, RECOMMENDED LIMIT OVER 8-HOUR WORKDAY, 40-HOUR WORKWEEK. 0.1 MG/M3 AS CHROMIUM TRIOXIDE, RECOMMENDED CEILING LIMIT OVER 15-MINUTE PERIOD.; ACGIH: 0.05 MG/M3 AS CHROMIUM (VI), THRESHOLD LIMIT VALUE (TLV) FOR TIME WEIGHTED AVERAGE (TWA).

## SECTION 6 - REACTIVITY DATA

**STABILITY** Unstable  Stable

**CONDITIONS TO AVOID**

CHROMIUM TRIOXIDE IS A POWERFUL OXIDIZING AGENT. MAY REACT RAPIDLY WITH ORGANIC MATERIALS TO PRODUCE HEAT TO CAUSE FIRE; THEREFORE AVOID CONTACT WITH PAPER, WOOD, PLASTICS, AND OTHER COMBUSTIBLE MATERIALS.

**INCOMPATIBILITY (MATERIALS TO AVOID)**

WILL IGNITE ON CONTACT WITH ACETIC ACID OR ALCOHOL. MAY EXPLODE UPON CONTACT WITH REDUCING AGENTS. CHROMIUM TRIOXIDE IS INCOMPATIBLE, AND SHOULD NOT COME IN CONTACT, WITH ANY OF THE FOLLOWING SUBSTANCES: ACETIC ACID, ACETIC ANHYDRIDE, TETRAHYDRONAPHTHALENE, ACETONE, ALCOHOLS, ALKALI METALS, ALUMINUM, AMMONIA, ARSENIC, BROMINE PENTAFLOURIDE, BUTYRIC ACID, N,N-DIMETHYLFORMAMIDE, HYDROGEN SULFIDE, PEROXYFORMIC ACID, PROSPHORUS, POTASSIUM HEXACYANOFERRATE, PYRIDINE, SELENIUM, SODIUM, AND SULFUR.

**SECTION 6 - REACTIVITY DATA (CONTINUED)****HAZARDOUS DECOMPOSITION OR BYPRODUCTS**

**HAZARDOUS POLYMERIZATION CONDITIONS TO AVOID** May Occur  Will Not Occur

**SECTION 7 - SPILL, LEAK AND DISPOSAL PROCEDURES****STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED**

PERSONS NOT WEARING PROTECTIVE EQUIPMENT AND CLOTHING SHOULD BE KEPT AWAY FROM AREAS WHERE SPILLS OR LEAKS HAVE OCCURED. VENTILATE AREA. INFORM SUPERVISOR OR HEALTH AND SAFETY OFFICER OF ANY SPILL. PROTECT AGAINST BREATHING MISTS AND GETTING LIQUID ON SKIN OR IN EYES WHEN CLEANING UP SPILL OR LEAK. TO CLEAN UP SPILL OR LEAK: CONTAIN SPILL AND PREVENT CHROMERGE (R) FROM LEAKING INTO SEWER DRAINS. SPILLED LIQUID SHOULD BE CHEMICALLY REDUCED AT PH 2 AND THE RESULTING RESIDUE SHOULD BE NEUTRALIZED TO PH 7.

**WASTE DISPOSAL METHOD**

CONSULT WITH YOUR SUPERVISOR OR HEALTH AND SAFETY OFFICER REGARDING THE PROPER, LEGAL DISPOSAL PROCEDURES FOR THE REDUCED RESIDUES. FEDERAL, STATE, AND LOCAL LAWS AND REGULATIONS IMPOSE HIGHLY SPECIFIC REQUIREMENTS FOR DISPOSAL OF TOXIC AND OTHERWISE HAZARDOUS MATERIALS. CHROMIUM TRIOXIDE IS CONSIDERED A HAZARDOUS WASTE UNDER THE RCRA. SPILLS MAY BE REPORTABLE TO STATE AND FEDERAL AGENCIES UNDER THE CLEAN WATER ACT. DO NOT DISPOSE OF POTENTIALLY TOXIC OR OTHERWISE HAZARDOUS SUBSTANCES WITHOUT APPROPRIATE AUTHORIZATION. PRIOR TO RECEIVING INSTITUTIONAL AUTHORIZATION, IT MAY BE NECESSARY TO STORE SPILLED MATERIALS. TO DO SO SAFELY, CAREFULLY LABEL CONTAINERS AND STORE IN A COOL, DRY LOCATION; MAINTAIN SECURITY OF STORAGE AREA UNTIL OFFICIAL GUIDANCE IS OBTAINED.

**SECTION 8 - SPECIAL PROTECTION INFORMATION****RESPIRATORY PROTECTION**

IF MANUFACTURER INSTRUCTIONS FOR PREPARATION AND USE OF CHROMERGE (R) ARE CAREFULLY FOLLOWED, RESPIRATORY PROTECTION WILL NOT NORMALLY BE REQUIRED. HOWEVER, SHOULD AIR LEVELS OF CHROMIUM TRIOXIDE EXCEED THE OSHA STANDARD, ONLY RESPIRATORS APPROVED BY NIOSH AND MSHA SHOULD BE USED. FOR LEVELS UP TO 30 MG/M3 OF CHROMIUM TRIOXIDE, USE ONE OF THE FOLLOWING: POWERED AIR-PURIFYING RESPIRATOR WITH HIGH-EFFICIENCY FILTER WITH FULL FACEPIECE; OR TYPE C SUPPLIED-AIR RESPIRATOR WITH FULL FACEPIECE OPERATED IN PRESSURE-DEMAND OR OTHER POSITIVE PRESSURE MODE; OR TYPE C SUPPLIED-AIR RESPIRATOR WITH FULL FACEPIECE, HELMET OR HOOD OPERATED IN CONTINUOUS-FLOW MODE. FOR AIR LEVELS UP TO 50 MG/M3 OF CHROMIUM TRIOXIDE, USE: HIGH-EFFICIENCY PARTICULATE RESPIRATOR WITH FULL FACEPIECE, HELMET OR HOOD; OR SELF-CONTAINED BREATHING APPARATUS WITH FULL FACEPIECE. FOR LEVELS ABOVE 50 MG/M3 OR AREAS OF UNKNOWN CONCENTRATIONS OF CHROMIUM TRIOXIDE, USE: HIGH-EFFICIENCY PARTICULATE RESPIRATOR; OR SELF-CONTAINED BREATHING APPARATUS.

**LOCAL VENTILATION**

YES

**MECHANICAL VENTILATION**

YES

**SPECIAL VENTILATION**

NOT GIVEN

**SECTION 8 - SPECIAL PROTECTION INFORMATION (CONTINUED)****OTHER VENTILATION**

CHROMERGE (R) IS ACTUALLY USED IN A WORKING SOLUTION IN COMBINATION WITH SULFURIC ACID. USERS SHOULD THEREFORE ALSO BE FAMILIAR WITH THE HEALTH AND SAFETY HAZARDS ASSOCIATED WITH SULFURIC ACID. LOCAL EXHAUST OR GENERAL DILUTION VENTILATION SHOULD BE USED TO COMPLY WITH THE OSHA STANDARD FOR CHROMIUM TRIOXIDE.

**PROTECTIVE GLOVES**

YES

**EYE PROTECTION**

YES

**OTHER PROTECTIVE CLOTHING OR EQUIPMENT**

USERS OF CHROMERGE (R) SHOULD HANDLE THE CHEMICAL APPROPRIATELY AND WEAR RUBBER GLOVES, RUBBER APRON, AND SPLASH-PROOF SAFETY GOGGLES TO FURTHER REDUCE THE POTENTIAL EXPOSURE. IF CHROMERGE (R) OR WORKING SOLUTION IS SPLASHED ONTO CLOTHES, REMOVE THEM IMMEDIATELY AND WASH CLOTHES AS SOON AS POSSIBLE. SAFETY SHOWERS AND EYE WASH FOUNTAINS SHOULD BE PROVIDED WITHIN THE IMMEDIATE WORK AREA FOR EMERGENCY USE.

**SECTION 9 - SPECIAL PRECAUTIONS****PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE**

STORE CHROMERGE (R) IN TIGHTLY CAPPED GLASS BOTTLES IN A COOL, DRY, WELL-VENTILATED AREA PROTECTED FROM ANY PHYSICAL DAMAGE. DO NOT STORE NEAR ANY COMBUSTIBLE, FLAMMABLE, ORGANIC OR OTHER READILY OXIDIZABLE MATERIALS. DO NOT STORE ON WOODEN FLOORS BECAUSE THE CHROMIUM TRIOXIDE IN CHROMERGE (R) CAN CAUSE RAPID DETERIORATION OF PAPER, WOOD, AND FIBER UPON CONTACT. DO NOT EAT, DRINK OR SMOKE IN WORK AREA. ALWAYS WASH HANDS THOROUGHLY WITH SOAP AND WATER AFTER USING CHROMERGE (R) AND BEFORE EATING, SMOKING, OR USING TOILET FACILITIES. DO NOT WEAR CONTACT LENSES WHILE WORKING WITH THIS CHEMICAL. OTHER PRECAUTIONS: AVOID BREATHING ANY MISTS GENERATED WHEN MIXING OR USING CHROMERGE (R). AVOID ANY SKIN CONTACT WITH CHROMERGE (R) OR WORKING SOLUTION.

**SECTION 10 - OTHER INFORMATION****MISCELLANEOUS INFO.**

FLAMMABILITY: 0; HEALTH: 3; REACTIVITY: 1; SPECIAL WARNINGS: OXY. SHIPPING INSTRUCTIONS: SHIPPING OF CHROMERGE (R) IS CAREFULLY DEFINED AND REGULATED. CHROMERGE (R) CAN BE SHIPPED BY UPS WITH NO LABELING REQUIREMENTS BUT IT CANNOT BE SHIPPED BY PARCEL POST. LIMITATIONS IN THE QUANTITY OF CHROMERGE (R) SHIPPED HAS BEEN SET AT THE FOLLOWING AMOUNTS: 1 QUART MAXIMUM NET QUANTITY IN ONE PACKAGE FOR PASSENGER CARRYING AIRCRAFT, 1 GALLON MAXIMUM NET QUANTITY IN ONE PACKAGE FOR PASSENGER CARRYING RAILROAD. THERE ARE NO QUANTITY LIMITATIONS FOR CHROMERGE (R) ON CARGO OR PASSENGER VESSELS; CHROMERGE (R) MAY BE STOWED ON DECK SUBJECT TO THE REQUIREMENTS OF 49CFR176.63(b). TO USE, CHROMERGE (R) MUST BE MIXED WITH SULFURIC ACID. TAKE A STANDARD 9LB. CONTAINER OF CONCENTRATED SULFURIC ACID. ADD, BY 5 ML AT A TIME, THE ENTIRE CONTENTS OF ONE 25ML BOTTLE OF CHROMERGE (R). SHAKE WELL. THE RESULTING WORKING SOLUTION WILL BE REDDISH-BROWN IN COLOR AND ODORLESS. THE CHROMIUM TRIOXIDE PRECIPITATE THAT FORMS IS NORMAL AND SERVES AS A SUPPLY OF ADDITIONAL CHROMIUM TRIOXIDE. THE WORKING SOLUTION WILL EVENTUALLY TURN GREEN, INDICATING THAT IT IS NO LONGER EFFECTIVE AS A CLEANER.

HEALTH HAZARDS (CONTINUED): WITH THIS CHEMICAL WILL RESULT IN ULCERS COMMONLY CALLED "CHROME HOLES". THE ULCERS MOST OFTEN FORM AROUND FINGERNAILS, FINGERJOINTS, EYELIDS, AND SOMETIMES FOREARMS. THESE SORES ARE PARTICULARLY A PROBLEM WHEN THERE IS A CUT OR BREAK IN THE SKIN. THE SKIN ULCER IS ROUND, VERY DEEP, AND USUALLY DOES NOT SPREAD; THE CENTER OF THE HOLE IS COVERED WITH A CRUST OR SCAB. ULCERS ARE SLOW TO HEAL AND MAY LAST FOR SEVERAL MONTHS BUT ARE NOT PAINFUL AND RARELY CAUSE PERMANENT DAMAGE. EYES: PURE CHROMIUM TRIOXIDE MAY CAUSE INFLAMMATION, TEARING, OR A DARK RED BAND ON THE CORNEA (THE CLEAR COVERING OF THE EYE). INGESTION: VERY SMALL AMOUNTS OF PURE CHROMIUM TRIOXIDE USUALLY DO NOT CAUSE PROBLEMS. HOWEVER, PROLONGED EXPOSURE MAY CAUSE STOMACH SPASMS, AND ULCERS AND INFLAMMATION OF THE STOMACH AND INTESTINE. THESE MAY BE ACCOMPANIED BY FATIGUE, WEARINESS, OR PAIN IN THE JOINTS, IN ADDITION TO NAUSEA VOMITING, INTENSE THIRST, WEAK AND RAPID PULSE RATE, AND SHALLOW BREATHS. SHOCK IS OFTEN THE CAUSE OF DEATH. CHRONIC (LONG-TERM) EXPOSURE: CANCER: CHROMIUM TRIOXIDE CONSISTS OF CHROMIUM (VI) AND OXYGEN. NUMEROUS STUDIES OF INDIVIDUALS WORKING CONTINUOUSLY WITH CHROMIUM (VI) COMPOUNDS FOR LONG PERIODS OF TIME HAVE SHOWN HIGHER LEVELS OF LUNG CANCER AMONG THESE WORKERS. THE IARC HAS FOUND "SUFFICIENT EVIDENCE" THAT CHROMIUM (VI) COMPOUNDS CAUSE CANCER IN ANIMALS AND HUMANS. CHROMIUM (VI) APPEARS ON CARCINOGEN LIST IN THE NTP THIRD ANNUAL REPORT ON CARCINOGENS. MUTATIONS: CHROMIUM TRIOXIDE HAS BEEN REPORTED TO CAUSE GENETIC DAMAGE OR CHANGES IN MOUSE, HAMSTER, AND HUMAN CELLS GROWN IN LABORATORY CULTURE. BIRTH DEFECTS AND EFFECTS ON REPRODUCTION: CHROMIUM TRIOXIDE HAS BEEN REPORTED TO CAUSE DEVELOPMENTAL ABNORMALITIES IN HAMSTER FETUSES AND REPRODUCTIVE EFFECTS IN HAMSTERS. OTHER EFFECTS: PROLONGED EXPOSURE TO PURE CHROMIUM TRIOXIDE HAS CAUSED SEVERE LIVER AND NERVOUS SYSTEM DAMAGE. A SKIN ALLERGY TO CHROMIUM TRIOXIDE CAN DEVELOP AFTER MANY EXPOSURES. REPEATEDLY BREATHING IN CHROMIUM TRIOXIDE MAY LEAD TO NASAL SEPTUM PERFORATION (SEE ACUTE EXPOSURE EFFECTS FOR INHALATION), INFLAMMATION OF THE SKIN INSIDE OF THE NOSE, NOSEBLEEDING, LUNG CONGESTION AND INFLAMMATION, HEARTBURN, AND EROSION AND DISCOLORATION OF THE TEETH.

THE INFORMATION, DATA AND RECOMMENDATIONS CONTAINED HEREIN WERE PROVIDED TO CMS BY THE MANUFACTURER NAMED ON THIS MATERIAL SAFETY DATA SHEET. CMS MAKES NO WARRANTY OF ANY KIND WHATSOEVER WITH RESPECT THERETO AND DISCLAIMS ALL LIABILITY FROM RELIANCE THEREON. CMS RESERVES THE RIGHT TO REVISE THIS MATERIAL SAFETY DATA SHEET AS NEW INFORMATION IS PROVIDED TO IT BY ITS MANUFACTURER.