

TRAINING DOCUMENTATION

SOLVENTS/EDC I PLANT
DOW CHEMICAL, LAD

HAZARDOUS WASTE OPERATIONS
OSHA 29 CFR 1910.120

NAME: JOHN A. SIMS

EMPLOYEE I.D. #: 431959

EMPLOYER: DOW CHEMICAL

JOB TITLE: SENIOR INST. SPEC.

CUMULATIVE TRAINING HISTORY (CHECK ALL APPLICABLE)

HOURS

☒	1. SAFETY MEETINGS	276
☒	2. PLANT INDOCTRINATIONS	7
☒	3. IPT MODULE COVERS: RCRA/TSCA/HAZARDOUS WASTE HANDLING	6
	4. INDUSTRIAL HYGIENE TRAINING:	
☒	HEARING PROTECTION	4
☒	RESPIRATORY PROTECTION	10
☒	OSHA HAZARD COMMUNICATIONS	20
☒	PERSONAL PROTECTIVE CLOTHING	4
☒	CONSEQUENCES OF OVEREXPOSURE TO TOXICS	10
	5. HAZWOPER TRAINING	4
	6. INDUSTRIAL HYGIENE REVIEW	10
	7. _____	_____
	8. _____	_____

CUMULATIVE WORK EXPERIENCE

YEARS

	1. <u>VINYL I</u>	16
	2. _____	_____
	3. <u>ENVIRONMENTAL</u>	5
	4. <u>LHC I</u>	6 mo
	5. <u>LHC II</u>	6 mo
	6. <u>LHC III</u>	6 mo
	7. <u>VINYL II, GLYCOL I, CHLORINE, LHC, GLYCOL II, POLYB, DOWANOLIS</u>	TURN AROUND
	8. <u>METHANE, POLYB, WASTE TREATMENT</u>	_____

THE ABOVE TRAINING AND EXPERIENCE IS JUDGED TO FAR EXCEED THE REQUIREMENTS FOR WORKING IN A HAZARDOUS WASTE FACILITY OR A HAZARDOUS WASTE REMEDIATION AREA AS SET FORTH IN OSHA 29 CFR 1910.120.

05-07-90

DO 016442
CONFIDENTIAL

HAZWOPER &
HAZCOM TRAINING

SUBJECTS COVERED: FILM - "WHAT'S IT ALL ABOUT" , "RCRA" , ^{Program}
CONTENTS & LOCATION OF HAZCOM ~~MANUAL~~ ,
HAZARDOUS CHEMICALS

<u>NAME</u>	<u>MASTER NO.</u>	<u>DATE</u>
JOHN A. SIMS	431959	10-9-91
Bernadette George	433390	9:15 A.M. 10-24-91 8:55am

10-3-91

TRAINING DOCUMENTATION

SOLVENTS/EDC I PLANT
DOW CHEMICAL, LAD

HAZARDOUS WASTE OPERATIONS
OSHA 29 CFR 1910.120

NAME: Bernadette George

EMPLOYEE I.D. #: 433397

EMPLOYER: Dow Chemical

JOB TITLE: Sr. Inst. Spec.

CUMULATIVE TRAINING HISTORY (CHECK ALL APPLICABLE)

HOURS

☒	1. SAFETY MEETINGS	<u>168</u>
☒	2. PLANT INDOCTRINATIONS	<u>8</u>
☒	3. IPT MODULE COVERS: RCRA/TSCA/HAZARDOUS WASTE HANDLING	<u>6</u>
☐	4. INDUSTRIAL HYGIENE TRAINING:	
☒	HEARING PROTECTION	<u>4</u>
☒	RESPIRATORY PROTECTION	<u>10</u>
☒	OSHA HAZARD COMMUNICATIONS	<u>20</u>
☒	PERSONAL PROTECTIVE CLOTHING	<u>4</u>
☒	CONSEQUENCES OF OVEREXPOSURE TO TOXICS	<u>30</u>
☒	5. HAZWOPER TRAINING	<u>4</u>
☒	6. INDUSTRIAL HYGIENE REVIEW	<u>10</u>
☐	7. _____	_____
☐	8. _____	_____

CUMULATIVE WORK EXPERIENCE

YEARS

☒	1. <u>Dowanol's</u>	<u>2 yrs</u>
☒	2. <u>Glycol II</u>	<u>2 yrs</u>
☒	3. <u>Glycol I</u>	<u>6 months</u>
☒	4. <u>Solvents</u>	<u>3 yrs</u>
☒	5. <u>Cellulose</u>	<u>1 1/2 yrs</u>
☒	6. <u>Central Inst Shop</u>	<u>5 yrs</u>
☒	7. <u>CA Polym (Fluor. & Chlorine P.E. Caustic Cell Service)</u>	<u>2 yrs</u>
☒	8. <u>LHCII, Enrich OP, R&D (Temporary OT work)</u>	<u>7</u>

THE ABOVE TRAINING AND EXPERIENCE IS JUDGED TO FAR EXCEED THE REQUIREMENTS FOR WORKING IN A HAZARDOUS WASTE FACILITY OR A HAZARDOUS WASTE REMEDIATION AREA AS SET FORTH IN OSHA 29 CFR 1910.120.

05-07-90

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**SOLVENTS/EDC I
PERSONNEL**

Again this year, in an attempt to avoid using up so much time spoon feeding this information in the class room sessions, you are being asked to review the consequences of overexposure while on regular hours. Please review and sign that you have reviewed the material. Return documentation to Ronnie Hotard. If there are any questions concerning the consequences of any of the chemicals, see Ronnie Hotard or Mike Brown.

Thanks,



Ronnie

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CONSEQUENCES OF EXPOSURE TO TOXIC AMOUNTS

ASBESTOS
ETHYLENE
HEXACHLOROBENZENE
HEXACHLOROBUTADIENE
HEXACHLOROETHANE
SYMMETRICAL TETRAS
CAUSTIC
EDC

CARBON TET
FERRIC CHLORIDE
HYDROGEN CHLORIDE AHCL
HYDROGEN CHLORIDE AQUEOUS
METHYLENE CHLORIDE
PERCHLOROETHYLENE
BETA-TRI
MYTHYLENE CHLORIDE

CHLORINE
DOWTHERM G
NITROGEN
NOISE
PCB'S
PDC
HEAT
NITROGEN

THE FOLLOWING PEOPLE HAVE REVIEWED CONSEQUENCES TO OVEREXPOSURE
TO THE ABOVE LISTED CHEMICALS:

John A. Lim _____
Bernadette George _____

DATE: 10-1-91 SHIFT: Days
SUPERVISOR/TRAINER: Ronnie Hotard, Jr.

9/91

DO 016446
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OVEREXPOSURE ASBESTOS

CONSEQUENCES OF OVEREXPOSURE (A-2)

=====

COMPOUND: ASBESTOS

EXPOSURE LIMIT: TWA 2 FIBERS/CC STEL NONE

ODOR THRESHOLD: NONE

EYES: CONTACT WITH DUST WILL CAUSE IRRITATION SIMILAR TO THAT
OF ANY FOREIGN MATERIAL.

SKIN: SLIGHT ITCHING SENSATION.

INGESTION: EVIDENCE INDICATES THAT SWALLOWED ASBESTOS MAY
INCREASE CHANCES OF STOMACH CANCER.

INHALATION: SHORT TERM - LOW CONCENTRATIONS WILL CAUSE NO
DISCOMFORT.

HIGH CONCENTRATIONS MAY CAUSE
MODERATE DISCOMFORT.

LONG TERM - SMOKERS WHO WORK WITH ASBESTOS HAVE

90 TIMES A GREATER RISK OF HAVING

CANCER THAN NONSMOKERS NOT WORKING
WITH ASBESTOS.

UNPROTECTED ASBESTOS WORKERS MAY
ALSO CONTRACT WHITE LUNG DISEASE
(ASBESTOSIS).

COMMENT: PROPER RESPIRATOR OR DUST MASK SHOULD BE USED WHEN
HANDLING OR WORKING WITH ASBESTOS.

MB/1986

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CONSEQUENCES OF OVEREXPOSURE (B-1)

COMPOUND: BETA-TRI (1,1,2 TRICHLOROETHANE)

EXPOSURE LIMIT: TWA 10 PPM STEL NONE

ODOR THRESHOLD: NOT YET ESTABLISHED

EYES: LIQUID WILL CAUSE IRRITATION AND PAIN.
LIQUID MAY CAUSE SLIGHT CORNEAL INJURY.
VAPOR MAY CAUSE IRRITATION.

SKIN: SINGLE CONTACT NOT LIKELY TO CAUSE IRRITATION.
REPEATED CONTACT WILL RESULT IN ABSORPTION OF TOXIC
AMOUNTS AND CAN CAUSE IRRITATION AND REDDENING
OF THE SKIN DUE TO EXTRACTION OF SKIN FATS.

INGESTION: NOT LIKELY TO BE SWALLOWED IN TOXIC AMOUNTS.
.IF ASPIRATED, WILL BE RAPIDLY ABSORBED IN OTHER
BODILY SYSTEMS.

INHALATION: SHORT TERM - VAPOR WILL CAUSE IRRITATION TO THE
EYES, NOSE, AND THROAT. ALSO MAY
CAUSE DIZZINESS, DROWSINESS, HEADACHE,
AND POSSIBLE LIVER AND/OR KIDNEY
DAMAGE. HIGH CONCENTRATIONS CAN CAUSE
DEATH.

LONG TERM - WILL CAUSE LIVER AND/OR KIDNEY DAMAGE.

COMMENTS: HAS BEEN SHOWN TO PRODUCE TUMORS IN LAB MICE.

MB/10-7-89

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CONSEQUENCES OF OVEREXPOSURE (C-3)

COMPOUND: CARBON TETRACHLORIDE

EXPOSURE LIMIT: TWA 2 PPM STEL NONE

ODOR THRESHOLD: 96 PPM (INADEQUATE)

EYES: LIQUID WILL CAUSE IRRITATION AND PAIN.
CORNEAL INJURY IS NOT LIKELY.
VAPOR MAY CAUSE IRRITATION.

SKIN: SINGLE CONTACT NOT LIKELY TO CAUSE IRRITATION.
SINGLE PROLONGED CONTACT WILL RESULT IN ABSORPTION
OF TOXIC AMOUNTS.
REPEATED CONTACT WILL RESULT IN ABSORPTION OF TOXIC
AMOUNTS AND CAN CAUSE IRRITATION AND REDDENING
OF THE SKIN DUE TO EXTRACTION OF SKIN FATS.

INGESTION: NOT LIKELY TO BE SWALLOWED IN TOXIC AMOUNTS, HOWEVER,
THE AVERAGE HUMAN LETHAL DOSE IS 5 - 10 MLS, WITH
RECORDED EVIDENCE OF DEATH OCCURRING WHEN AS LITTLE
AS 1.5 MLS HAS BEEN INGESTED.
IF ASPIRATED, WILL BE RAPIDLY ABSORBED IN OTHER
BODILY SYSTEMS.

INHALATION: SHORT TERM - VAPOR WILL CAUSE IRRITATION TO THE
EYES, NOSE, AND THROAT. ALSO MAY
CAUSE DIZZINESS, DROWSINESS, HEADACHE,
AND POSSIBLE LIVER AND/OR KIDNEY
DAMAGE. HIGH CONCENTRATIONS CAN CAUSE
DEATH.

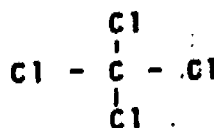
LONG TERM - WILL CAUSE LIVER AND/OR KIDNEY DAMAGE.

COMMENTS: CARBON TET IS A LISTED POTENTIAL CARCINOGEN.
HAS BEEN SHOWN TO PRODUCE LIVER TUMORS IN LAB ANIMALS.
ALCOHOL MAY INCREASE POSSIBLE LIVER AND/OR KIDNEY
DAMAGE IN COMBINATION WITH OVEREXPOSURE.
TABACCO PRODUCTS SHOULD NOT BE CARRIED INTO AREAS
WHERE EXPOSURE IS LIKELY.

MB:12/89

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CARBON TETRACHLORIDE



TET IS A COLORLESS LIQUID WITH A CHLOROFORM-LIKE ODOR. THE DISTINCTIVE ODOR CAN BE DETECTED AT ABOUT 75 PPM,

WHICH IS 38 TIMES GREATER THAN THE THRESHOLD LIMIT VALUE OF 2 PPM. THUS, IF YOU CAN SMELL IT, YOU ARE BEING OVER-EXPOSED.

TET IS TOXIC BY INHALATION AND INGESTION. THE IMMEDIATE EFFECTS OF INHALATION ARE DROWSINESS, HEADACHE, AND POSSIBLE ABDOMINAL DISCOMFORT. INHALATION CAN RESULT IN DAMAGE TO THE HEART, LIVER, AND KIDNEYS. ALL KNOWN OR SUSPECTED OVER-EXPOSURE REQUIRE MEDICAL ATTENTION.

A SPILL ON THE CLOTHING OR SKIN CAN RESULT IN OVEREXPOSURE THROUGH EITHER INHALATION OR ABSORPTION. EVEN THOUGH NO IMMEDIATE DISCOMFORT MAY DEVELOP, IT IS IMPERATIVE THAT ONE GET OUT OF THE CONTAMINATED AREA, GET UNDER A WATER SHOWER, AND THEN REMOVE CLOTHING. A MOUTH RESPIRATOR SHOULD BE USED WHILE LEAVING THE CONTAMINATED AREA. IF YOU MUST WORK IN THE AREA WITH HIGH TET LEVELS IN THE AIR, A CANISTER MASK OR FRESH AIR IS REQUIRED.

EYE EXPOSURE TO LIQUID TET RESULTS IN SLIGHT BURNING AND IRRITATION. IMMEDIATELY FLUSH EYES WITH WATER FOR 15 MINUTES. GET MEDICAL ATTENTION.

UNCONSCIOUSNESS CAN RESULT FROM INHALATION OF HIGH LEVELS. IF THIS OCCURS, REMOVE THE PERSON FROM THE CONTAMINATED AREA, APPLY ARTIFICIAL RESPIRATION IF NEEDED, AND WASH TO REMOVE THE TET FROM THE SKIN AND CLOTHING.

DISCARD TOBACCO EXPOSED TO LIQUID OR HIGH CONCENTRATIONS OF TET VAPORS. IT IS SAFEST NOT TO CARRY CIGARETTES OR TOBACCO PRODUCTS INTO THE PLANT AREA. LEAVE THEM INSIDE.

PROLONGED OR REPEATED CONTACT OF THE SKIN WITH LIQUID TET CAUSES IRRITATION DUE TO REMOVAL OF NATURAL OILS IN THE SKIN. DERMATITIS AND CRACKING OF THE SKIN CAN ALSO DEVELOP.

TET IS NOT FLAMMABLE; HOWEVER, CONTACT WITH OPEN FLAMES AND WELDING ARCS RESULTS IN DECOMPOSITION PRODUCTS SUCH AS HCL, PHOSGENE, AND OTHER IRRITATING ORGANIC MATERIALS AS WELL AS PROBABLE INCREASE IN CONCENTRATION OF TET VAPORS.

A MOUTH RESPIRATOR IS HELPFUL FOR GETTING OUT OF CONTAMINATED AREAS. HOWEVER, THEY ARE NOT TO BE USED TO WORK IN A CONTAMINATED AREA. A GAS MASK OR SUPPLIED AIR MUST BE USED WHERE CHEMICALS ARE PRESENT.

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MISCELLANEOUS INFO ON CARBON TET

TOXIC TO THE LIVER BECAUSE THE LIVER HAS A HIGH CAPACITY TO BIOTRANSFORM CCl_4 (TET) TO THE FREE RADICAL $\cdot\text{CCl}_3$.

TET IS METABOLIZED TO: CHLOROFORM
 HEXACHLOROETHANE
 PHOSGENE

"POTENTIATION" OF THE TOXIC EFFECTS OF CARBON TET AND BETA-TRI AND THE LIVER OCCUR IN THE PRESENCE OF UNMETABOLIZED ALCOHOL AND UNCONTROLLED DIABETES. IT IS ALSO PROBABLE THAT AN EXTREMELY LOW-CARBOHYDRATE DIET (i.e. STILLMAN'S , ETC.) WHICH INDUCES A STATE OF "KETOSIS" WILL POTENTIATE LIVER DAMAGE DUE TO TET OR BETA-TRI OVEREXPOSURE.

CARBON TET CAN BE ABSORBED THROUGH THE SKIN IN QUANTITIES GREAT ENOUGH TO CAUSE DAMAGE TO THE LIVER. IT PASSES THROUGH THE SKIN BY DIFFUSION IN THE MOISTURE IN THE SKIN. SKIN NORMALLY CONTAINS ABOUT 90 TIMES AS MUCH WATER AS DRY TISSUE. THIS MUCH WATER INCREASES THE PERMEABILITY OF THE SKIN APPROXIMATELY TENFOLD OVER THAT WHEN IT IS PERFECTLY DRY. UPON ADDITIONAL CONTACT WITH WATER, THE SKIN CAN INCREASE ITS WEIGHT OF WATER 3 TO 5 TIMES, WHICH RESULTS IN AN ADDITIONAL 2 TO 3-FOLD INCREASE IN PERMEABILITY.

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CONSEQUENCES OF OVEREXPOSURE (C-4)

COMPOUND: CAUSTIC (SODIUM HYDROXIDE)

EXPOSURE LIMIT: TWA 2 MG/M3 AS MIST OR DUST STEL NONE

ODOR THRESHOLD: NOT YET ESTABLISHED

EYES: VAPOR CONTACT NOT LIKELY.
LIQUID WILL CAUSE CORNEAL DESTRUCTION AND RESULT IN LOSS
OF VISION.

SKIN: CAN CAUSE DEEP AND PAINFUL DESTRUCTION OF TISSUE AND
RESULTING IN A SEVERE BURN. DILUTE SOLUTIONS CAN CAUSE
BLISTERING DUE TO EXTRACTION OF SKIN FATS.

INGESTION: VERY PAINFUL WITH DESTRUCTION OF TISSUE.

INHALATION: CAN CAUSE COUGHING WITH PAINFUL NOSE AND THROAT
IRRITATION. ALSO, NASAL TISSUE DESTUCTION IS POSSIBLE.

MB/10-7-89

CONSEQUENCES OF OVEREXPOSURE (C-5)

COMPOUND: CHLORINE (LIQUID AND H. P. GAS)

EXPOSURE LIMIT: TWA .5 PPM STEL 1 PPM

ODOR THRESHOLD: .3 PPM (ADEQUATE)

EYES: VAPOR WILL CAUSE IRRITATION, PAIN, AND/OR A BURN.
LIQUID WILL CAUSE BURN AND/OR CORNEAL DESTRUCTION.
PERMANENT IMPAIRMENT OF VISION IS POSSIBLE FROM
BOTH VAPOR AND LIQUID.

SKIN: CONTACT WITH HIGH CONCENTRATIONS OF GAS WILL CAUSE BURNING
SENSATION WITH POSSIBLE SWELLING OR BLISTERS.
SINGLE CONTACT CAN CAUSE SEVERE BURNS.
CONTACT WITH LIQUID CAN CAUSE TISSUE DESTRUCTION.

INGESTION: NOT LIKELY TO BE SWALLOWED IN TOXIC AMOUNTS.

INHALATION: SHORT TERM - HIGH CONCENTRATIONS WILL CAUSE IRRITATION
TO THE EYES, NOSE, AND THROAT, WITH
POSSIBLE VOMITING AND UNCONSCIOUSNESS.
VERY HIGH CONCENTRATIONS WILL RESULT IN
THE DESTRUCTION OF LUNG TISSUE AND DEATH.

LONG TERM - INCREASED CHANCE OF RESPIRATORY DISEASE
AND EROSION OF TEETH. WILL ALSO CAUSE
COUGHING AND TIGHTNESS OF CHEST.

MB/10-7-1989

DO 016454
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CONSEQUENCES OF OVEREXPOSURE (D-2)

COMPOUND: DOWTHERM G

EXPOSURE LIMIT: TWA 1 PPM STEL NONE

ODOR THRESHOLD: 1-4 PPM (ADEQUATE)

EYES: VAPOR CAN CAUSE IRRITATION.
LIQUID AT AMBIANT TEMPERATURE CAN CAUSE IRRITATION
AND PAIN. LIQUID AT OPERATING TEMPERATURE WILL CAUSE
CORNEAL DESTRUCTION.

SKIN: CONTACT WITH SKIN AT AMBIANT TEMPERATURE CAN CAUSE
IRRITATION AND REDDENING OF SKIN DUE TO EXTRACTION
OF SKIN FATS. LIQUID AT OPERATING TEMPERATURE CAN
CAUSE SEVERE BURNS AND TISSUE DESTRUCTION.

INGESTION: NOT LIKELY TO BE SWALLOWED IN TOXIC AMOUNTS.

INHALATION: SHORT TERM - IRRITATION TO EYES, NOSE, AND THROAT.
ODOR IS STRONG AND UNPLEASANT.

LONG TERM - WILL CAUSE LIVER AND/OR KIDNEY DAMAGE.

COMMENTS: BECAUSE OF STRONG ODOR, VOLUNTARY OVEREXPOSURE IS
UNLIKELY.

MB/10-7-1989

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CONSEQUENCES OF OVEREXPOSURE (E-3)

COMPOUND: ETHYLENE

EXPOSURE LIMIT: NONE - SIMPLE ASPHYXIAANT - OXYGEN CONCENTRATION SHOULD ALWAYS BE ABOVE 18 %.

ODOR THRESHOLD: 290 PPM (ADEQUATE)

EYES: VAPOR IS NONIRRITATING.
LIQUID WILL CAUSE CORNEAL DESTRUCTION.

SKIN: VAPOR IS NONIRRITATING.
LIQUID WILL CAUSE TISSUE DESTRUCTION.

INGESTION: NO HAZARD FROM GAS.
NOT LIKELY TO BE SWALLOWED IN TOXIC AMOUNTS.

INHALATION: SHORT TERM - IS AN ASPHYXIAANT AND CAN CAUSE DIZZINESS
AND POSSIBLY DEATH DUE TO LACK OF
OXYGEN. NARCOTIC LIKE EFFECT IS SIGN OF
OVEREXPOSURE.

LONG TERM - EFFECTS THE CENTRAL NERVOUS SYSTEM.

COMMENTS: FLAMMABLE.
ASPHYXIAANT.

MB/10-7-89

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CONSEQUENCES OF OVEREXPOSURE (E-4)

COMPOUND: ETHYLENE DICHLORIDE

EXPOSURE LIMIT: TWA 1 PPM STEL 2 PPM

ODOR THRESHOLD: 88 PPM (INADEQUATE)

EYES: LIQUID WILL CAUSE IRRITATION AND PAIN.
WILL CAUSE CORNEAL INJURY.
VAPOR WILL CAUSE LACRIMATION (TEARING).

SKIN: SINGLE CONTACT NOT LIKELY TO CAUSE IRRITATION.
REPEATED CONTACT WILL RESULT IN ABSORPTION OF TOXIC
AMOUNTS AND CAN CAUSE IRRITATION AND REDDENING
OF THE SKIN DUE TO EXTRACTION OF SKIN FATS.

INGESTION: NOT LIKELY TO BE SWALLOWED IN TOXIC AMOUNTS.
IF ASPIRATED, WILL BE RAPIDLY ABSORBED IN OTHER
BODILY SYSTEMS.

INHALATION: SHORT TERM - VAPOR WILL CAUSE IRRITATION TO THE
EYES, NOSE, AND THROAT. ALSO MAY
CAUSE DIZZINESS, DROWSINESS, HEADACHE,
AND POSSIBLE LIVER AND/OR KIDNEY
DAMAGE. HIGH CONCENTRATIONS CAN CAUSE
DEATH.

LONG TERM - WILL CAUSE LIVER, LUNG, KIDNEY,
DIGESTIVE TRACT, AND CENTRAL NERVOUS
SYSTEM DAMAGE.

COMMENTS: ETHYLENE DICHLORIDE IS A LISTED POTENTIAL CARCINOGEN.
HAS BEEN SHOWN TO CAUSE CANCER IN LAB ANIMALS.
IT MUST BE NOTED THAT THERE IS A FINE LINE BETWEEN
LEVELS THAT CAUSE NO EFFECT AND LEVELS THAT RESULT
IN REACTIONS SIMILAR TO THOSE STATED ABOVE.

MD/10-7-89

DO 016457
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CONSEQUENCES OF OVEREXPOSURE (F-1)

COMPOUND: FERRIC CHLORIDE

EXPOSURE LIMIT: TWA 1mg/m3 STEL NONE

ODOR THRESHOLD: NOT YET ESTABLISHED

EYES: WILL CAUSE SEVERE IRRITATION AND PAIN.
WILL CAUSE CORNEAL INJURY.

SKIN: REPEATED AND PROLONGED CONTACT MAY CAUSE SKIN BURNS.
CAN STAIN SKIN.

INGESTION: NOT LIKELY TO BE SWALLOWED IN TOXIC AMOUNTS.

INHALATION: SHORT TERM - WILL CAUSE SOME PAIN AND DIFFICULTY
BREATHING DUE TO ACIDITY OF COMPOUND.
MAY ALSO CAUSE NAUSEA AND VOMITING IN
HIGH CONCENTRATIONS.

LONG TERM - NO LONG TERM EFFECTS ARE KNOWN.

MB/10-7-89

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CONSEQUENCES OF OVEREXPOSURE (H-1)

HEAT

EXCESSIVE SWEATING CAN LEAD TO A SALT IMBALANCE IN THE BODY. THIS IMBALANCE MAY THEN RESULT IN HEAT EXHAUSTION, OR EVEN WORSE, A HEAT STROKE. BOTH ARE CAUSED BY REPEATED OR PROLONGED EXPOSURE WHICH WILL CAUSE THE FAILURE OF THE SWEAT REGULATING MECHANISM THAT COOLS THE BODY. WHEN HEAT STROKE OCCURS, IT IS IMPERATIVE THAT THE VICT. BE TREATED IMMEDIATELY. IF TREATMENT IS NOT RENDERED QUICKLY, THERE IS A GREAT CHANCE THAT DEATH WILL OCCUR.

IT SHOULD BE REMEMBERED THAT DURING THE HOT MONTHS OF THE YEAR YOUR SALT INTAKE SHOULD INCREASE, ESPECIALLY IF YOU ARE WORKING OUTSIDE. BY INCREASING THE AMOUNT OF SALT USED IN SEASONING YOUR FOOD, YOU WILL BE ABLE TO HELP YOUR BODY'S METABOLISM KEEP PACE WITH THE HEAT, AND THEREBY AVOID HEAT RELATED PROBLEMS.

IT MUST BE REMEMBERED TO TAKE A COUPLE OF EXTRA BREAKS AND ALSO TO CONSUME AS MUCH WATER AS POSSIBLE.

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MB/10-7-55

CONSEQUENCES OF OVEREXPOSURE (H-2)

COMPOUND: **HEXACHLOROBENZENE**

EXPOSURE LIMIT: TWA - NONE ESTABLISHED FOR AIR, HOWEVER, DOW MEDICAL DEPARTMENT LIMIT IS 150 PPB IN BLOOD.

ODOR THRESHOLD: NOT YET ESTABLISHED.

EYES: ESSENTIALLY NONIRRITATING.
CONTACT WITH DUST WILL CAUSE IRRITATION SIMILAR TO THAT
OF ANY FOREIGN MATERIAL.

SKIN: TOXIC AMOUNTS CAN BE ABSORBED THROUGH REPEATED SKIN CONTACT BUT MAIN HAZARD IS BIOACCUMULATION
LIQUID CAN CAUSE MODERATE IRRITATION. REPEATED OR PROLONGED EXPOSURE CAN CAUSE LIVER AND/OR KIDNEY DAMAGE AND IN SEVERE CASES DEATH.
CONTACT WITH DUST MAY CAUSE SLIGHT IRRITATION.

INGESTION: AMOUNTS SWALLOWED DURING NORMAL PLANT OPERATING CONDITIONS DO NOT POSE A HEALTH THREAT. LARGER DOSES, HOWEVER, COULD LEAD TO SERIOUS HEALTH PROBLEMS, INCLUDING LIVER AND/OR KIDNEY DAMAGE. MAIN HAZARD IS BIOACCUMULATION.

INHALATION: VAPORS ARE UNLIKELY DUE TO PHYSICAL PROPERTIES OF COMPOUND.
CONTACT WITH DUST WILL CONTRIBUTE TO BIOACCUMULATION.

COMMENTS: HEXACHLOROBENZENE IS A LISTED POTENTIAL CARCINOGEN.
HAS BEEN SHOWN TO CAUSE CANCER IN LAB ANIMALS.
HAS BEEN SHOWN TO CAUSE BIRTH DEFECTS IN LAB ANIMALS.
HAS BEEN SHOWN TO BE PRESENT IN TOXIC AMOUNTS IN
BABIES OF FEMALE HUMANS KNOWN TO HAVE INGESTED TOXIC
AMOUNTS.

ME / 10-7-89

DO 016460
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CONSEQUENCES OF OVEREXPOSURE (H-3)

COMPOUND: HEXACHLOROBUTADIENE

EXPOSURE LIMIT: TWA .02 PPM STEL NONE

ODOR THRESHOLD: .2 PPM (INADEQUATE)

EYES: LIQUID WILL CAUSE IRRITATION AND PAIN.
 CONTACT WITH DUST WILL CAUSE IRRITATION SIMILAR TO THAT
 OF ANY FOREIGN MATERIAL.
 VAPOR MAY CAUSE IRRITATION.

SKIN: TOXIC AMOUNTS MAY BE ABSORBED THROUGH THE SKIN.
 A SINGLE PROLONGED CONTACT CAN RESULT IN SUFFICIENT
 ABSORPTION OF MATERIAL AND CAUSE DEATH.
 LIQUID CAN CAUSE MODERATE IRRITATION. REPEATED OR
 PROLONGED EXPOSURE CAN CAUSE LIVER AND/OR KIDNEY DAMAGE
 AND IN SEVERE CASES DEATH.
 CONTACT WITH DUST MAY CAUSE SLIGHT IRRITATION.

INGESTION: AMOUNTS SWALLOWED DURING NORMAL PLANT OPERATING
 CONDITIONS DO NOT POSE A HEALTH THREAT. LARGER DOSES,
 HOWEVER, COULD LEAD TO SERIOUS HEALTH PROBLEMS,
 INCLUDING LIVER AND/OR KIDNEY DAMAGE.

INHALATION: SHORT TERM - LOW CONCENTRATIONS CAN CAUSE NOSE, THROAT,
 AND LUNG IRRITATION. A SINGLE PROLONGED
 CONTACT WITH HIGH CONCENTRATIONS CAN
 CAUSE LIVER AND/OR KIDNEY DAMAGE AND DEATH.

 LONG TERM - MAY LEAD TO SERIOUS HEALTH PROBLEMS
 INCLUDING LIVER AND/OR KIDNEY DAMAGE.

COMMENTS: HEXACHLOROBUTADIENE HAS BEEN SHOWN TO BE CARCINOGENIC
 IN LAB RATS BUT ONLY AT EXCESSIVELY HIGH CONCENTRATIONS.

MB/10-7-89

DO 016461
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CONSEQUENCES OF OVEREXPOSURE (H-4)

COMPOUND: HEXACHLOROETHANE

EXPOSURE LIMIT: TWA 1 PPM STEL NONE

ODOR THRESHOLD: .15 PPM (ADEQUATE)

EYES: WILL CAUSE IRRITATION AND PAIN.
 MAY CAUSE CORNEAL INJURY.
 CONTACT WITH DUST WILL CAUSE IRRITATION SIMILAR TO THAT
 OF ANY FOREIGN MATERIAL.
 VAPOR MAY CAUSE IRRITATION.

SKIN: REPEATED OR PROLONGED EXPOSURE CAN CAUSE SKIN IRRITATION.
 CONTACT WITH DUST MAY CAUSE SLIGHT IRRITATION.

INGESTION: AMOUNTS SWALLOWED DURING NORMAL PLANT OPERATING
 CONDITIONS DO NOT POSE A HEALTH THREAT. LARGER DOSES,
 HOWEVER, COULD LEAD TO SERIOUS HEALTH PROBLEMS,
 INCLUDING LIVER AND/OR KIDNEY DAMAGE.

INHALATION: SHORT TERM - LOW CONCENTRATIONS CAN CAUSE NOSE, THROAT,
 AND LUNG IRRITATION.
 HIGH CONCENTRATIONS CAN CAUSE SERIOUS
 LUNG DAMAGE.

 LONG TERM - MAY LEAD TO SERIOUS HEALTH PROBLEMS
 INCLUDING LIVER AND/OR KIDNEY DAMAGE AND
 CENTRAL NERVOUS SYSTEM EFFECTS.

COMMENTS: HEXACHLOROETHANE HAS BEEN SHOWN TO CAUSE CANCER IN
 LAB ANIMALS.

MB/10-7-89

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CONSEQUENCES OF OVEREXPOSURE (H-5)✓

COMPOUND: HYDROGEN CHLORIDE (ANHYDROUS)

EXPOSURE LIMIT: TWA 5 PPM-C STEL NONE

ODOR THRESHOLD: .77 PPM (ADEQUATE)

EYES: LIQUID CAN CAUSE SEVERE BURNS, FROSTBITE, AND CORNEAL DESTRUCTION.
VAPOR CAN CAUSE SEVERE BURNS.
BOTH LIQUID AND VAPOR ARE DANGEROUS WHEN THEY COME IN CONTACT WITH THE EYES AND ARE VERY IRRITATING.

SKIN: LIQUID CAN CAUSE SEVERE BURNS, FROSTBITE, AND DESTRUCTION OF TISSUE.
VAPOR CAN CAUSE SEVERE IRRITATION WITH POSSIBLE BURNS.
BOTH LIQUID AND VAPOR ARE DANGEROUS WHEN THEY COME IN CONTACT WITH THE SKIN AND ARE VERY IRRITATING.

INGESTION: NOT LIKELY TO BE SWALLOWED IN TOXIC AMOUNTS.

INHALATION: SHORT TERM - CAN CAUSE SERIOUS INTERNAL INJURY AND EVEN DEATH.
LONG TERM - CAN CAUSE ULCERATION OF THE NOSE AND THROAT AND EROSION OF THE TEETH.

COMMENTS: THE GAS CAN BE ABSORBED BY PERSPIRATION DROPLETS RESULTING IN A MODERATELY IRRITATING STINGING SENSATION.
VOLUNTARY OVEREXPOSURE IS UNLIKELY DUE TO STRONG IRRITATING PROPERTIES.

MB/10-7-89

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CONSEQUENCES OF OVEREXPOSURE (H-6)

COMPOUND: HYDROGEN CHLORIDE (AQUEOUS)

EXPOSURE LIMIT: TWA 5 PPM-C STEL NONE

ODOR THRESHOLD: .77 PPM (ADEQUATE)

EYES: LIQUID CAN CAUSE SEVERE BURNS AND CORNEAL DESTRUCTION.
VAPOR CAN CAUSE BURNS AND IS VERY IRRITATING.

SKIN: LIQUID CAN CAUSE SEVERE BURNS IN PROLONGED CONTACT.
VAPOR IS MODERATELY IRRITATING.

INGESTION: NOT LIKELY TO BE SWALLOWED IN TOXIC AMOUNTS.

INHALATION: . SHORT TERM - LOW CONCENTRATIONS CAN CAUSE NOSE AND
THROAT DISCOMFORT AND SOME DIFFICULTY IN
BREATHING.
HIGH CONCENTRATIONS CAN CAUSE ULCERATION
OF THE NOSE AND THROAT AND POSSIBLE
LUNG DAMAGE.

LONG TERM - CAN CAUSE ULCERATION OF THE NOSE AND
THROAT AND POSSIBLE LUNG DAMAGE.

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CONSEQUENCES OF OVEREXPOSURE (M-3)

COMPOUND: METHYLENE CHLORIDE

EXPOSURE LIMIT: TWA 50 PPM STEL NONE

ODOR THRESHOLD: 250 PPM (INADEQUATE)

EYES: LIQUID WILL CAUSE IRRITATION AND PAIN.
CAN CAUSE CORNEAL INJURY.
VAPORS SLIGHTLY IRRITATING.

SKIN: CAN BE MILDLY IRRITATING IN SMALL QUANTITIES. REPEATED
AND PROLONGED EXPOSURE WILL CAUSE DRYNESS AND REDDENING
OF SKIN DUE TO EXTRACTION OF SKIN FATS. CONFINED CONTACT
CAN CAUSE BURNS.

INGESTION: NOT LIKELY TO BE SWALLOWED IN TOXIC AMOUNTS.
IF ASPIRATED, WILL BE RAPIDLY ABSORBED IN OTHER
BODILY SYSTEMS.

INHALATION: SHORT TERM - LOW CONCENTRATION'S YIELD SYMPTOM'S
SIMILAR TO ALCOHOL INTOXICATION.
HIGH CONCENTRATION'S WILL RESULT IN
HEADACHE'S AND POSSIBLY UNCONSCIOUSNESS.
EXTREMELY HIGH CONCENTRATION'S CAN
RESULT IN DEATH.

LONG TERM - LONG TERM TOXICITY IS UNLIKELY DUE TO
SHORT TERM EFFECTS, HOWEVER, THERE CAN
BE CENTRAL NERVOUS SYSTEM EFFECTS.

COMMENTS: METHYLENE CHLORIDE IS A LISTED POTENTIAL CARCINOGEN.
HAS BEEN SHOWN TO INCREASE RATE OF SPONTANEOUS
MALIGNANT TUMORS IN LAB MICE AND BENIGN TUMORS IN LAB
RATS.
SMOKING GREATLY INCREASES INHALATION HAZARDS.

MB:12/89

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CONSEQUENCES OF OVEREXPOSURE (N-3)

COMPOUND: NITROGEN

EXPOSURE LIMIT: NONE - SIMPLE ASPHYXIAANT - OXYGEN CONCENTRATION SHOULD ALWAYS BE ABOVE 18 %.

ODOR THRESHOLD: ODORLESS

EYES: CONTACT IS NONIRRITATING.

SKIN: CONTACT IS NONIRRITATING.

INGESTION: NONTOXIC.

INHALATION: SHORT TERM - NONTOXIC. IS AN ASPHYXIAANT AND WILL CAUSE DIZZINESS IN OXYGEN DEFICIENT ATMOSPHERE'S. PROLONGED EXPOSURE IN OXYGEN DEFICIENT ATMOSPHERE WILL RESULT IN DEATH.

LONG TERM - NONE.

COMMENT: THE EARTH'S ATMOSPHERE IS NORMALLY 78% NITROGEN AND 21% OXYGEN. OXYGEN CONCENTRATIONS UNDER 21% ARE DANGEROUS AND CONCENTRATIONS UNDER 16% ARE LIFE THREATENING.

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CONSEQUENCES OF OVEREXPOSURE (N-4)

COMPOUND: NOISE

EXPOSURE LIMIT: TWA 85 db (A) - 90 db (A) C

HEARING LOSS WILL OCCUR AT 90 DB OVER AN EIGHT HOUR PERIOD. THE CONCERN HERE IS WITH LONG TERM EXPOSURE, BECAUSE SHORT TERM EFFECTS WILL NOT BE EASILY RECOGNIZED.

THE INITIAL EFFECT IS THE REDUCTION OF THE ABILITY TO HEAR SOUNDS IN THE HIGH FREQUENCY RANGE. IF UNCHECKED, THE HEARING LOSS WILL THEN EXTEND INTO THE LOWER FREQUENCIES AND COMPLETE HEARING LOSS WILL OCCUR.

IT IS IMPORTANT TO REMEMBER THAT ONCE YOU LOSE ANY LEVEL OF YOUR HEARING ABILITY THAT IT WILL NEVER RETURN.

COMMENT: ALWAYS CARRY YOUR HEARING PROTECTION AS IT IS NECESSARY PART OF YOUR SAFETY EQUIPMENT. DOW REGULATIONS REQUIRE THE USE OF HEARING PROTECTION IN ANY AREA WITH A NOISE LEVEL OF 90 db (A) OR GREATER.

MB/10-7-89

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TR-8000-1032

NOISE

REPT H

LATEST REVISION: 08/26/89

SYNONYMS

EXPOSURE GUIDELINES:

OSHA PEL: 90 dBA for 8-hour TWA exposure with an action level of 85 dBA which requires hearing conservation program; no continuous exposures allowed above 115 dBA.
ACGIH TLV: 85 dBA for 8-hour TWA exposure; no continuous or intermittent exposures above 115 dBA.
Dow IHG: No exposures above 90 dBA regardless of exposure time.

----- POTENTIAL HEALTH EFFECTS -----

This section includes possible adverse effects which could occur if this material is not handled in the recommended manner. These effects apply to stated material and may not apply to dilutions or formulations of that material.

SUBCHRONIC EFFECTS

- ACUTE/SUBCHRONIC EFFECTS:
- Brief exposure (minutes) to high noise levels may cause ringing in the ears and temporary hearing loss.
- Noise-induced hearing loss should be restored within 16 hours if it is temporary.
- Single brief exposure to very loud noise may damage the eardrum or middle ear bones resulting in permanent hearing loss.
- Prolonged or repeated exposure to noise may cause permanent hearing loss due to damage to the inner ear. Symptoms of excessive exposure to noise may also include dizziness, nausea, and an increased tendency to be startled by stimuli.

C NSEQUENCES OF EXPOSURE TO TOXIC AMOUNTS

NOISE

ACUTE: Short exposure to high noise levels may cause ringing in the ears and/or temporary hearing loss. Potential for damage increases as sound pressure levels increase above 90 dBA. Repeated short-term exposures may cause permanent loss.

CHRONIC: Repeated exposures may destroy hair cells which transmit sound signals to the brain and may cause permanent hearing loss.

Degree of hearing loss determined by sound level (dBA) & exposure time.

Average dBA

80
85
90

% of exposed workers with hearing loss at end of working lifetime

0-5
10-15
21-29

Typical sound pressure levels (dBA)

40
60
85

95
105
115
120

Situation

quiet room
window air conditioner
noise requiring you to raise voice to be heard at 3 feet.
power lawn mower
saws, grinders
sand blasters
pneumatic chipper or nail driver

TR-8009-1022

DO NOT CONFIDENTIAL

CAS 899

Page 1

Health Effects:

Acute:

Individuals exposed to high noise levels for even brief periods of time may experience permanent damage to their hearing mechanism. As noise levels increase above 90 dBA, the amount of time required to cause destruction of the sensitive hair cells of the inner ear (cochlea) decreases. This is believed to occur via a metabolic mode in which the hair cells fatigue from lack of oxygen and/or build-up of waste products. Initially, the hair cells of the inner ear can recover from noise trauma if given a sufficient time between insults. This loss is termed a temporary threshold shift or TTS. Upon repeated or prolonged exposures, the cells do not recover and may result in a permanent standard threshold shift. Hearing loss is permanent because hair cells do not grow back. Sound pressure levels at or above 115 dBA (8-hr day) may exceed the elastic limit of the normal hearing mechanisms and result in acoustical trauma (hearing loss due to mechanical damage to the hearing mechanism). A single exposure to loud noise, typically above 140 dBA (explosive noise) can result in hearing loss due to perforation of the eardrum or disruption of the middle ear bones.

Chronic:

Repeated exposures may cause progressive destruction of hair cells which transmit sound signals to the brain and result in permanent hearing loss (permanent standard threshold shift). Data compiled by ISO, EPA and NIOSH indicated that the risk of material impairment after a working lifetime at 80 dBA ranged from 0 - 5%. Risk of material impairment at 85 dBA and 90 dBA were 10-15% and 21-29% respectively. This data is based on exposure to continuous noise levels without benefit of rest periods (quieter noise periods) or hearing protection. With age, there is some natural hearing loss which is taken into account when a person receives an audiometric exam.

CONSEQUENCES OF EXPOSURE TO TOXIC AMOUNTS

NOISE

EXPOSURE GUIDELINES:

OSHA PEL = 90 dBA TWA for 8-hour exposure; no continuous exposures above 115 dBA. TWA of 85 dBA or above requires hearing conservation program.

DOW IHG - No exposures above 90 dBA for any exposure period.

If 8-hour TWA = 85 dBA or more, employee must:

- Receive baseline & annual audiometric exam to identify early hearing losses and prevent more severe ones.
- Receive annual training on the effects of noise, and proper use of hearing protectors.
- Wear hearing protectors if audiometric exam shows a standard threshold shift (STS)
STS = an average loss of 10 dB at speech frequencies of 2000, 3000 and 4000 Hz in either ear.

HEARING PROTECTORS: ear plugs and muffs.

- Should reduce noise to below 85 dBA.
- Required for any exposures above 90 dBA.
- Both muffs and plugs may be required if levels are above 100 dBA.
- Proper seal is critical to give maximum protection.

TR-6000-1000

DOW CONFIDENTIAL

CAS 8700

HEARING CONSERVATION PROGRAM REQUIREMENTS & PRECAUTIONS

The hearing conservation program requirements and exposure precautions are based on the follow exposure categories:

LOW - TWA < 85 dBA **MOD** - TWA 85-90 dBA **HIGH** - TWA > 90 dBA

EVALUATION OF NOISE EXPOSURES:

LOW: Area noise monitoring is recommended a minimum of every three years. Representative exposure monitoring is not required as long as the initial exposure estimates indicate that no employee has the potential to exceed a TWA of 85 dBA.

MOD: Representative exposure measurements are to be obtained when initial information indicates that an employee's TWA may equal or exceed 85 dBA, or there is a potential for exposure to noise levels > 90 dBA.

HIGH: Representative exposure measurements are to be obtained when initial information indicates that an employee's TWA may equal or exceed 85 dBA or there is potential for exposure to noise levels > 90 dBA.

All Exposure Categories: Monitoring shall will be repeated (optimally every 3 months) whenever a change in production, process, equipment or controls may result in new or additional exposures at or above the 8-hr TWA of 85 dBA, or may result in exposures > 90 dBA.

PERSONAL HEARING PROTECTION:

LOW: No hearing protection required.

MOD: Hearing protectors shall be made available to all employees exposed to an 8-hr TWA of 85 dBA or more. Employees with a Standard Threshold Shift and an 8-hr TWA of 85 dBA or more must wear hearing protectors. Hearing protectors must be worn when noise exposures exceed 90 dBA regardless of exposure time.

HIGH: Hearing protectors shall be made available to all employees exposed to an 8-hr TWA of 85 dBA or more. Employees with a Standard Threshold Shift and an 8-hour TWA of 85 dBA or more must wear hearing protectors. Hearing protectors must be worn when noise exposures exceed 90 dBA regardless of exposure time. For noise levels in excess of 105 dBA, a combination of both earplugs & muffs are recommended.

SOLVENTS / EDC 1
1988 NOISE LEVEL SURVEY
POTENTIAL NOISE EXPOSURE SOURCES

PLANT EQUIPMENT	SOUND LEVEL (dba)
PLANT AIR (3/4 " BLEED WIDE OPEN)	132 db
475 # STEAM TRAP (AR-40 A & B)	112 db
K-40 A	106 - 102 db
AR-40 A & B (ON LINE)	105 db
K-520 DECK	105 - 100 db
C-500 INLET CONTROL VALVE	104 db
AHCL TO C-TRAIN CONTROL VALVE	104 db
K-40 B	102 - 100 db
DR-40 A & B	102 db
K-3 E HOT GAS BYPASS CONTROL VALVE	102 db
WS-40	101 db
BL-740	100 db
RIVER WATER PUMPS (SOLVENTS)	98 - 95 db
D-2 C DUMP CONTROL VALVE (OPENING)	97 db
K-3 E GROUND LEVEL	95 - 93 db
NORTH R-1 E BOTTOMS PUMPS	95 db
AR-40 A & B (OFFLINE)	95 db
E-550'S	94 - 90 db
P-820'S	92 db
P-810'S	92 db
WEST C-13 BOTTOMS PUMP	92 db
K-3 E LIQUID FREON INJECTION CONTROL VALVE	92 db
RIVER WATER PUMPS (EDC 1)	92 - 88 db
P-20	92 db
ETHYLENE TO R-1 D CONTROL VALVE	92 db
P-800'S	91 db
K-5 B & D	91 - 85 db
EAST OF T-15/16 PUMPS	90 db
ETHYLENE TO R-1 D CONTROL VALVE	90 db
K-5 C & F	90 db
C-20 A BOTTOMS	89 db
R-1 D OVERHEAD PUMPS	88 db
SOUTH C-14 A BOTTOMS PUMP	88 db
C-14 A BOTTOMS CONTROL VALVE	88 db
P-201 A	87 db
SOUTH D-23 A	87 db
EAST R-1 E	87 db
C-14 B OVERHEAD PUMPS	86 db
E-541'S	86 db
WEST R-1 D	85 db
R-1 C INLET	84 db
C-81	84 db
NORTH IRON DRUM	83 db
R-1 C TO C-1 C	81 db
WS-40	80 db
AF-40	79 db

HAND TOOLS (IMPACT NOISE)	SOUND LEVEL (dba)
HAMMER (ON METAL)	116 db
HAMMER (ON STEEL CHISEL)	106 db
HAMMER (DRIVING NAIL)	103 db
HAMMER (ON WOOD CHISEL)	95 db

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OVEREXPOSURE PERCHLOROETHYLENE

CONSEQUENCES OF OVEREXPOSURE (P-3)
=====

COMPOUND: PERCHLOROETHYLENE

EXPOSURE LIMIT: TWA 25 PPM STEL NONE

ODOR THRESHOLD: 27 PPM (ADEQUATE)

EYES: LIQUID WILL CAUSE IRRITATION AND PAIN.

SKIN: REPEATED AND PROLONGED EXPOSURE MAY CAUSE REDNESS AND DRYNESS DUE TO EXTRACTION OF SKIN FATS.

INGESTION: NOT LIKELY TO BE SWALLOWED IN TOXIC AMOUNTS.

INHALATION: SHORT TERM - LOW CONCENTRATIONS WILL CAUSE HEADACHES
WITH MILD EYE, NOSE, AND THROAT IRRITATION.
HIGH CONCENTRATIONS MAY CAUSE DROWSINESS
AND EFFECTS SIMILAR TO ALCOHOL INTOXICATION.
LONG TERM - CAN CAUSE LIVER AND/OR KIDNEY DAMAGE.

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OVEREXPOSURE PCB'S

CONSEQUENCES OF OVEREXPOSURE (P-7)

COMPOUND: POLY-CHLORINATED-BIPHENYLS (PCB'S) IN GENERAL

EXPOSURE LIMIT: TWA .5 mg/m3 STEL NONE

EYES: CAN BE MODERATELY IRRITATING TO THE EYES.

SKIN: CHLORACNE CAN DEVELOP WITH PROLONGED EXPOSURES.
THE COMPOUNDS CAN BE READILY ABSORBED THROUGH
THE INTACT SKIN. SKIN CONTACT SHOULD BE
AVOIDED.

INGESTION: NOT LIKELY TO BE SWALLOWED IN AMOUNTS WHICH
ARE TOXIC.

INHALATION: ROOM TEMPERATURE --- THE HAZARD OF INHALATION
AT ROOM TEMP. IS SLIGHT.
HEATED ----- MAY BE IRRITATING TO THE
NOSE AND THROAT. PROLONGED
EXPOSURE TO 54% CHLORINATED
DIPHENYL MAY PRODUCE SOME
LIVER DAMAGE.

COMMENT: THE MAIN CONCERN OF PCB'S IS THAT THEY WILL
BIOACCUMULATE.

MB/1989

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OVEREXPOSURE 1,1,2,2 TETRACHLOROETHANE

CONSEQUENCES OF OVEREXPOSURE (T-2)

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COMPOUND: 1,1,2,2 TETRACHLOROETHANE (SYMMETRICAL TETRAS)

EXPOSURE LIMIT: TWA 1 PPM STEL NONE

ODOR THRESHOLD: 1.5 PPM (INADEQUATE)

EYES: LIQUID WILL CAUSE IRRITATION AND PAIN.

SKIN: TOXIC AMOUNTS CAN BE ABSORBED THROUGH THE SKIN.
REPEATED OR PROLONGED CONTACT MAY CAUSE REDNESS AND
DRYNESS DUE TO EXTRACTION OF SKIN FATS.

INGESTION: NOT LIKELY TO BE SWALLOWED IN TOXIC AMOUNTS.

INHALATION: SHORT TERM - LOW CONCENTRATIONS CAN CAUSE DIZZINESS,
NAUSEA, AND VOMITING. HIGH CONCENTRATIONS
MAY RESULT IN UNCONSCIOUSNESS.

LONG TERM - CAN RESULT IN LIVER AND/OR KIDNEY DAMAGE.

COMMENT: THIS MATERIAL IS CONSIDERED TO BE VERY TOXIC THROUGH
VAPOR INHALATION.

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