

Monsanto File

p. 7
P.A.-D
Bladder
Carcin.

Ex 40

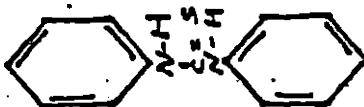
Aniline. M A C - 5 p p m - W. Va.

Structural Formula:



Carbon disulfide — MAC 20 ppm — W. Va.

Thio carbanilide
Structural formula:

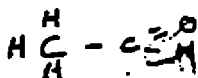


How ground & packed? Dusty? Can cause cyanosis. Toxic or irritant —

A M A Archives, April, 1952. Dermatitis Producer - L. Schwartz

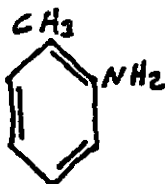
A - 22. What is it?

Acetaldehyde — M A C 200 ppm - W. Va. Irritant to mucous membranes and a general narcotic on the central nervous system. Causes chronic intoxication similar to chronic alcoholism. Higher concentrations cause headache, stupefaction, bronchitis, pulmonary edema, diarrhea, albuminuria, fatty degeneration of the liver and cardiac muscles, and death. — Elkins.



O - toluidine

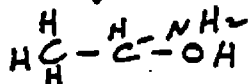
Structural Formula:



Similar to aniline in toxicity. Produces less cyanosis but causes more injury to urinary system and more hematuria. — A. Hamilton. A principle specific irritant - L. Schwartz

M A C - 5 ppm - W. Va.

Ammonia — M A C - 100 ppm - W. Va.



Toxic or irritant - A M A Archives, April, 1952.

Will decompose on heating or grinding to acetaldehyde & ammonia.

Building 3, 15*

Na CN M A C - 5 mg / M₃ as C N.

H C N - M A C 10 ppm — W. Va.

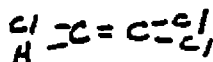
Chlorine - M A C — 1 ppm - W. Va.

H₂ SO₄ — M A C — 1 Mg/M₃ - W. Va.

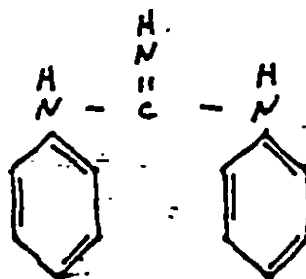
Na OH

Trichloethylene - M A C - 100 ppm - W. Va.

Structural Formula:



Diphenylguanidine (or Diarylguanidine)
Structural Formula:



Toxic or irritant. *Principal specific irritant - L. Schwartz*
Possibly check here for aniline, H C N, trichlorethylene, bagging rather dusty.

Building 8

Diethylene glycol $\text{HO} - \begin{array}{c} \text{H} \\ | \\ \text{C} \\ | \\ \text{H} \end{array} - \begin{array}{c} \text{H} \\ | \\ \text{C} \\ | \\ \text{H} \end{array} - \text{O} - \begin{array}{c} \text{H} \\ | \\ \text{C} \\ | \\ \text{H} \end{array} - \begin{array}{c} \text{H} \\ | \\ \text{C} \\ | \\ \text{H} \end{array} - \text{OH}$

Toxic. Has caused bladder cancer. Easily absorbed through the skin to cause death 1 cc per kg. fatal to man. Check to see if it is a solvent for santomerse.

Santomerses — cause sneezing.

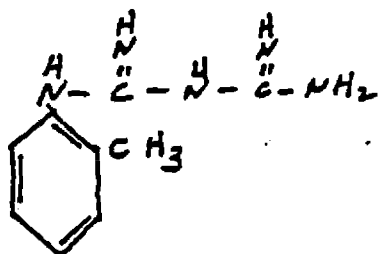
Building 16 & 17

Plastic Sulfur

* Grinding Building

Sopancox

Structural Formula:



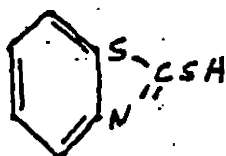
Santowhite (Di (4-tertiary-butyl - m - cresol) sulfide)

Moderately toxic - liver & kidney damage.

A M A Archives, April, 1952.

Thiotax

Structural Formula:

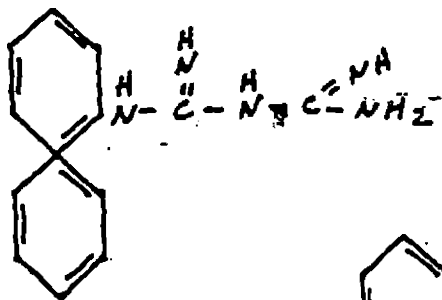


Santocure - Similar chemically to "thiopentex" and "isocyclax", which are toxic.

Formula: N - cyclo hexyl - 2 benzothiazyl sulfenamide.

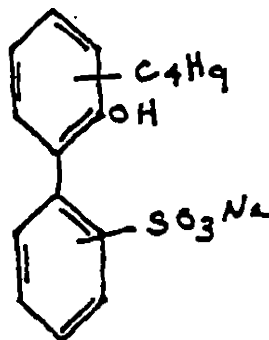
S A 326

Structural Formula:



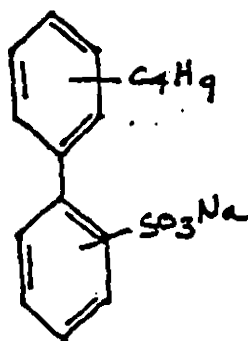
Areskap

Structural Formula:



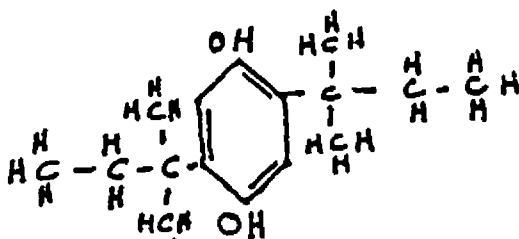
Aresket

Structural Formula:



Santovar A

Structural Formula:



S V 1 7 5 No definite structure.

Building 21

E 1 - 60

Non-toxic (A. M. A. Archives April, 1952).

Mercaptobenzothiasol

Formula $C_6H_4SC(SH):N$

Principal Specific Irritant - L. Schwartz

Formaldehyde - M & C 5 ppm - W. Va.



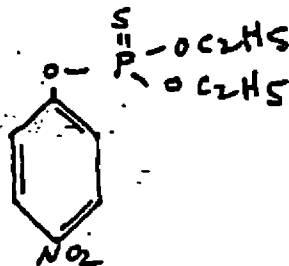
Urea

Structural Formula: $H_2N - \overset{O}{\overset{||}{C}} - NH_2$

Apparently harmless.

Building 21 Niran (Parathion)

Structural Formula:



No M & C, but known to be very toxic.

Vapor pressure at 24° C approx. 1/3 that of mercury.

Possibly check here for parathion when filter press is cleaned once in 24 hours.

PS Cl₂ — toxic.

How handled?

Sodium ethylate

Structural Formula: $NaOC_2H_5 \cdot 2C_2H_5OH$

Very toxic. Decomposes into alcohol + Na OH

P. - nitrophenol

Structural Formula:



Very toxic. Causes skin irritation and cyanosis. Brown urine.

Building 25

P Cl₃. M A C - 0.5 ppm. W. Va.

20 cases of acute & subacute poisoning which affected workers employed in the production of P Cl₃ during the period April 1951 - May 15 1952 are described. The Conc. of P Cl₃ in the workroom was 10 - 20 mg/H₃ under normal conditions and 80 - 150 mg/H₃ at times when the plant was out of order.

In acute poisoning, the disturbances which set in after 2 to 6 hours exposure consist of a burning sensation in the eyes and throat, photophobia, feeling of chest oppression, dry cough with irritation of the conjunctival mucous membrane of the pharynx, and slight bronchitis. In subacute chronic poisoning, the symptoms occur after 1 - 8 weeks work and consist of slight degree of irritation of the pharynx, coughing, catarrh, effort and nocturnal dyspnea, with the objective finding of serious asthmatic bronchitis. After one to two years employment there is the appearance of pulmonary emphysema. In both acute and subacute chronic poisoning, slight rises in temperature accompanied by moderate leucocytoses with neutrophilia are of frequent occurrence. Roentgenologically speaking, the chest presents a normal appearance or shows slight signs of exaggeration of the pulmonary markings. The acute form clears up in 3 - 6 days. The subacute form lasts 10 - 15 days and shows a marked tendency to recur and to evolve into chronic bronchitis of asthmatic type with emphysema. P Cl₃ is an irritant substance which exerts its action at the level of the skin and mucous membrane, where it decomposes to H Cl and phosphoric acid, depriving the tissues of water with production of intense heat. Workers suffering from poisoning should be removed from exposure and treated with frequent bathing of the eyes and with aludine cerceols, penicillin and balsamic remedies. -- Med. Lavoro 43:298 (August - September) 1952.

Al Cl_3

Irritating, Hydrolyzes to HCl .

Glycerine - non toxic.

Polyglycerol - nothing on it.

Building 30

Sodium - Nuff said.

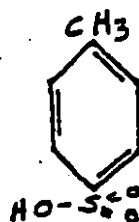
Ethyl Alcohol - makes you drunk.

Sodium ethylate. See Building 21 above.

Building 34

Toluene Sulfonic acid

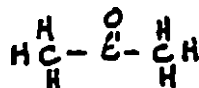
Structural Formula:



Probably nontoxic - A. Hamilton.

Acetone - M A C = 500 ppm - W. Va.

Structural Formula:



p - amino - biphenyl

Structural Formula:



From "Observations on the Effects of Diphenyl & Derivatives Upon Experimental Animals". Deichmann et al. J. I. H. & Tox. Vol. 29, January, 1947.

1. When administered orally in olive oil to rabbits in one dose P - A - D induced increase in respiratory rate, lachrimation, lack of appetite and loss of body weight, muscular weakness, unsteadiness, respiratory difficulties and death in coma after intervals from 10 hours to 12 days. LD 50 = 0.69 g/ kg.

2. Order of toxicity of several compounds in order of increasing toxicity; diphenyl, O - nitro diphenyl, p - nitro diphenyl, O - amino diphenyl, p - amino diphenyl, and dihydroxy octachloro diphenyl (rabbits).

3. P - a - d on skin of rabbits did not show signs of local irritation, but isolated fatalities occurred, and all animals showed subnormal gain of body weight. It must be concluded that absorption took place to a degree sufficient to induce systemic poisoning.

4. Repeated oral administration of p - a - d in total quantities 3 to 27 times lethal dose induced anemia, a decrease in the number of lymphocytes, and an increase in the number of polymorpho - nuclear or band cells in the peripheral circulation, together with hematuria and hemoglobinuria.

5. P - a - d is partially conjugated in the tissues of rabbits and excreted with hexuronic acid and organic sulfates. Output of these afforded an indirect means for estimating the extent of the absorption of p - a - d.

From: Brit. J. of Ind. Medicine, October, 1952:

P - a - d. Animal experiments performed and results show that p - a - d produces intestinal tumors in rats. By analogy with benxidine (which also produces intestinal tumors in rats and bladder tumors in man, it is suggested that p - a - d also produces bladder tumors in man. Review of history of dye workers throws suspicion on p - a - d as the prime carcinogen.

adder
reins

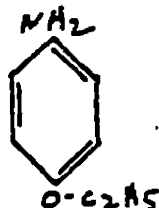
Possibly check urine sulfate ratio. Check for P-A-B in grinding & drumming out. Ajone C. Since this contains up to 0.5% p - a - d, take samples here. This grinding & bagging operation is dusty.

Ajone P —

N - N' diphenyl p - phenylene diamine. Similar chemically to "Agerite White" which is considered moderately toxic. "Agerite White" is N N' dibeta - naphthyl - p - phenylene diamine. P - phenylene diamine is toxic. Curschman produced fatal poisoning in cats by rubbing a few grams into the skin. — A. Hamilton. A principal cause of dermatitis in the rubber industry. No reference on this particular derivative

P - phenetidine.

Structural Formula:



Used as a drug (antipyretic). Nothing on toxicity. Should be less toxic than aminophenol, which is much less toxic than aniline.

Possibility of checking for aniline, H Cl.

Santoflex A W — Nothing on it.

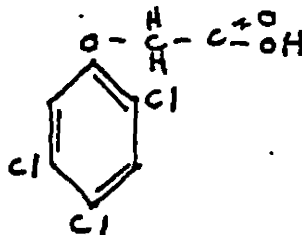
Building 34 E & A.

Flectal H — No data. (Polymerized 2,2,4 - trimethyl dihydro quinoline)

Building 34 D & P.

2, 4, 5, - T.

Structural Formula:



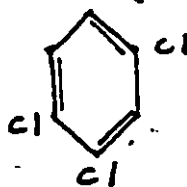
Dermatitis produced here —

20 mg/kg lethal in dogs. Will cause heart and liver damage. Check ventilation on bagging operation, also conc. of dust mg/M₃

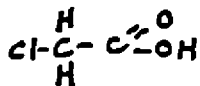
Sodium Trichlorophenate

Structural Formula:

A toxic material (Dang. Chemicals).



Monochloroacetic Acid



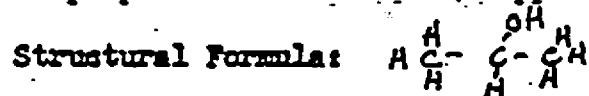
Structural Formula:

Said to produce painless burns followed by extensive desquamation. It is strongly caustic. — A. Hamilton.

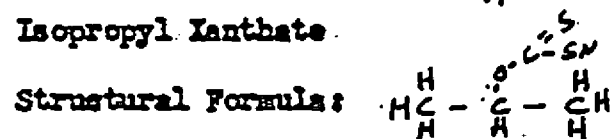
Building 40

Kerosene — not considered very toxic — Jacobs.

Isopropanol — M & G. 400 ppm — W. Va.



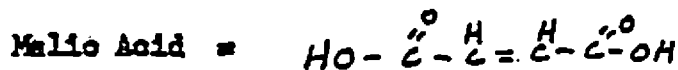
Isopropyl Ianthate



No references.

Abatol — What is it?

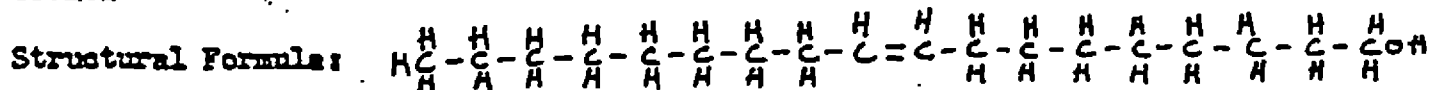
Malates — Esters of malic acid & Coccol.



P₂ O₅ is a solid, M.P. 563. Decomposes to H₃ PO₄ with water. Extreme Irritant.

Can cause dermatitis. No cases in industry of chronic or systemic poisoning (Dang. Materials).

Coccol



No references.

Hydrobetyl alcohol — this is meant to be hydrobisetyl alcohol.

Ditertiary amyl phenol.

Structural Formula: ?

A phenol, but no references.

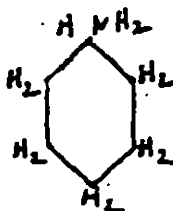
Building 41

C S₂ M A C 20 ppm - W. Va.

Aniline

Building 45

Cyclohexylamine



Structural Formula:

Highly toxic - brain & liver damage. Severe irritant to skin. Nausea and anxiety after 1 severe exposure - Ind. Med. & Surg., July, 1950.

L D 50 = 0.2 g/kg in animals - severe shock, brain liver & kidney damage. Severe irritative effect to animals, moderate sensitizing effect. Severe irritative and slight sensitizing effect on man. - A.M.A. Archives, April, 1952.

(Similar chemically to cyclohexanol, whose structural formula is:

M A C = 100 ppm - W. Va. Non-phenolic. May paralyze the central nervous system and is more toxic than benzene. Not dangerous due to low volatility. - Jacobs.
How about dust? Melts 23 - 25° C. Boils at 163° C.

Building 46

Mono tertiary butyl meta cresol.

Structural Formula:

No references. Cresols generally are similar to phenol in their physiological action — irritation, discoloration and erosion of the skin and mucous membranes, and nephritis.

$S Cl_2$

Dark red liquid. Corrosive liquid, decomposing on contact with water, forming HCl & $S O_2$ (Dang. Mat). M. P. - 78, B. P. 59 C.

Skellysolve C. These materials are decanes and dodecanes. (Kerosene Fraction)
 $C_{10}H_{22}$ $C_{12}H_{26}$

2,2' thio bis (4,6 dichlorophenol)

No dope!

Carbon tetrachloride — 'Nuff Said.

2,4 dichlorophenol

Toxicity of phenol increases as chlorine is added to ring.

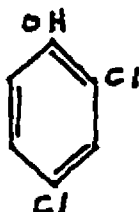
Powerful skin irritant — some evidence of cumulative action — possible heart and kidney damage — Elkins.

L.D₅₀ - 0.38 gm / kg — Rats — oral

" 1.73 gm / kg — Rats subcutaneous.

M P — 45° C. B P 132° C.

Structural Formula:



Monochlorobenzene

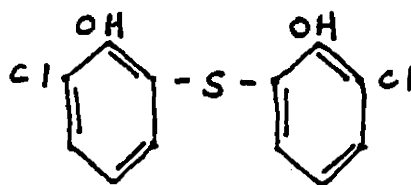
About as Toxic as Benzene — Jacobs.

M A C — 75 ppm — W. Va.



Actamex

Structural Formula:



Building 46 (Small Products)

Butyraldehyde

Structural Formula: $\begin{array}{c} \text{H} & \text{H} & \text{H} & & \text{O} \\ | & | & | & & // \\ \text{H}-\text{C} & - & \text{C} & - & \text{C} & - & \text{C} \\ | & | & | & & \\ \text{H} & \text{H} & \text{H} & & \text{H} \end{array}$

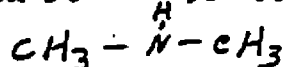
M P — -99° C. B. P. 75.7° C.

Irritates upper respiratory tract and mucous membranes, and can cause narcosis in animals which absorb too much. Ordinarily the degree of danger from this material is mild.

Cresote Oil. B. P. 378 - 752° F. Flash Point 165° F. (Closed Cup).

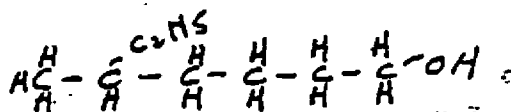
Can cause cancer through skin contact ("Carcinogens & Carcinogenes". Box 67).

di methylamine M. P. — -96° C. B.P. 7.4° C.



2-ethylhexanol B. P 183° C.

Structural Formula:



Can cause opaque cornea, keratoconus and necrosis (experimental) (Dang. Materials).

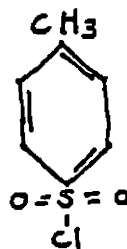
Toluene M A C 200 ppm — W. Va.

Structural Formula:



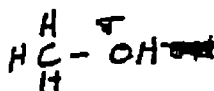
p - toluene sulfonylchloride - No references.

Structural Formula:



Methanol M A C = 200 ppm — W. Va.

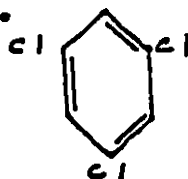
Structural Formula:



Toxic - destroys optic nerve.

1,5, Trichlorobenzene. B.P. 214.8° C.

Structural Formula:



Similar to other chlorobenzenes M A C 50 ppm. Irritating to the respiratory system and eyes, and can damage the liver. Effects can be serious. (Dang Materials).

Building 51

4,5-Tetrachlorobenzene M P 138° C BP 246° C.

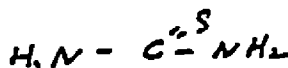
Structural Formula:



Building 54

Thiourea

Structural Formula:



Toxic. Thiourea derivatives have been known to cause cancer in mice. (Dang. Materials). Adults can tolerate 300 mg/kg for a considerable period — Stokinger.

Calcium cyanamide

Structural Formula: $CaCN_2$

Produces severe lesions on mucous membranes of nose and throat, and upon skin, requiring 25 - 40 days to heal. Very little alcohol after breathing cyanamide produces vasomotor depression — flushing, sweating, rapid pulse, headache, ringing in the ears, and dyspnea. Symptoms disappear in from an hour or two to 48 hours. — (A. Hamilton).

Fatal dose to man is 40 - 50 g. Chronic intoxication is rare. Must be considered both an irritant and systemic poison. Gastrointestinal symptoms predominate. Can cause conjunctivitis, ophthalmia, keratitis, injection sclerotic membrane, lachrymation and ulceration of cornea. Has caustic reaction on skin. (Dang. Materials).

Lime. — Can cause burns of skin and mucous membranes.

Sodium sulfhydrate Na HS.

H₂ S — 'Nuff said.

Building 60 & 70

Plastic Sulfur

Sulfur Monochloride S₂ Cl₂

Apparently non-toxic - A. Hamilton.

Dermatitis Producer - L. Schwartz

2 - 9 ppm mildly irritating. Hydrolyzes in water to form H Cl & S O₂

Irritation of upper respiratory tract, usually transitory — Elkins.

Bromine — M A C 1 ppm — W. Va.

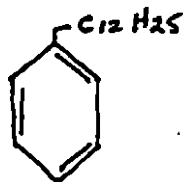
Building 66

Research Laboratory

Building 71

Dodecyl Benzene

Structural Formula:

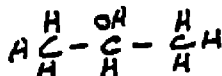


Sodium sulfate.



Isopropanol M A C = 400 ppm - W. Va.

Structural Formula



Sodium hypochlorite. -- Skin irritant.

S O₃ (liquid).

M A C = 2 - 10 ppm. Irritating at 1 ppm for unexposed persons -- causes choking.

Effects same as sulfuric acid, which is a water solution of S O₃ (Dang. Materials).

Butylamine. M P -- 50.5° C B. P. 77.8° C.

Structural Formula:



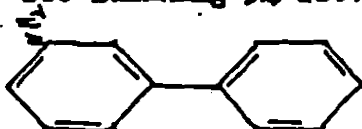
Said to be quite toxic -- Elkins.

Has ammonia like odor. Dangerous eye hazard. (Dang. Materials).

Building 75A

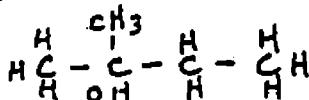
O - amino - biphenyl. See Building 34 above.

Structural Formula:



Tertiary amyl alcohol M P - 11.9° C. B. P. 101.8° C.

Structural Formula:

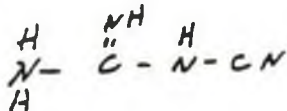


Said to be very toxic, little known of its action in the body. Because of low solubility industrial poisoning is not likely to occur. Irritating to the eyes & upper respiratory tract. (Dang. Materials).

M A-C of isocyanyl is 100 ppm - W. Va.

di cyandiamide (para).

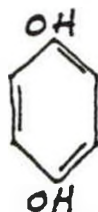
Structural Formula:



Principal specific irritant - L. Schwartz

Hydroquinone. M. P. 170.5° C. B. P. 286.2° C.

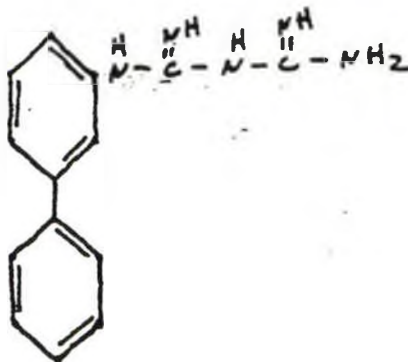
Structural Formula:



More toxic than phenol. 10 - 30 mg / cu.m. causes keratitis and discoloration of the conjunctiva. Ingestion of 1 g. by an adult may induce tinnitus, nausea, dizziness, a sensation of suffocation, increased rate of respiration, vomiting, pallor, muscular twitching, headache, dyspnea, cyanosis, delirium, & collapse. (Dang. Materials).

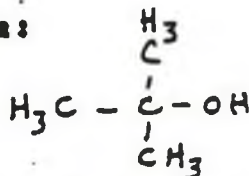
O - biphenyl biguanide. No references.

Structural Formula:



Tertiary Butyl Alcohol

Structural Formula:



N - butyl alcohol is irritating in concentrations over 100 ppm.

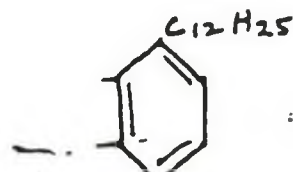
Building 75 D

Benzol - Huff Said.
MAC - 35 ppm



Dodecyl Benzene

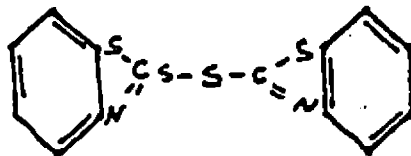
Structural Formula:



Building 78 & 79

Thiofide

Structural Formula:



Tall oil — Flammable liquid.

Stearic Acid

Structural Formula:

