MONSANTO COMPANY
ANNISTON PLANT

STANDARD OPERATING INSTRUCTIONS FOR PYRANOLS

December 1967

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MONSANTO COMPANY
ANNISTON PLANT

STANDARD OPERATING INSTRUCTIONS

FOR

PYRANOLS

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OPERATING INSTRUCTIONS
PYRANOLS

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OPERATING INSTRUCTIONS
PYRANOLS

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SYNOPSIS OF

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OPERATING INSTRUCTIONS
PYRANOLS

A. SYNOPSIS OF PROCESS

1. General

Most Pyranols are produced by the mixing of distilled Aroclor with various other raw materials. Some of the Pyranols are treated with attapulgus earth and filtered prior to loading for shipment. There are three Pyranols blends that are produced by the mixing of distilled Aroclors only.

The quality of each mix is analyzed by the Laboratory, and when approved, it is loaded into tank cars or drawn out into drums.

2. Mix Tank Area

There are two mix tanks used in the production of Pyranol mixes. One is a 12,000 gallon tank and the other is a 2,000 gallon tank. Each tank is equipped with an agitator. Sales demand for some of the mixes does not warrent production of large mixes. which accounts for the second, or small, mix tank. All mixes produced in the large tank are filtered through a Sparkler filter. Mixes produced in the small tank, which are not treated with attapulgus earth, are packaged in drums only, and filtered through a diaper cloth sock on the end of the drum-out line.

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SAFETY AND

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B. SAFETY AND HOUSEKEEPING

Safety of operations in the Aroclor Plant depends on the individual operator. Materials being handled and operations must be observed closely to guard against the following:

	Cause and Action to Prevent
1. Chlorine Gas	Chlorine gas is a very toxic corrosive gas. Leaks or high pressure can occur to liberate it.

Action to Prevent

a. Report Chlorine gas exposure immediately for treatment with Antidote. Milk may be used in mild cases to relieve throat irritation. Oxygen from the resuscitator in the Dispensary is available.

b. Keep gas mask in good condition. Keep a good canister in the mask. Use these type masks only in chlorine concentrations to 2-3% chlorine in air.

c. Use a Scott Air Pak in concentrations of chlorine gas above 3% in air. Three units are available in the Aroclor-Biphenyl Department.

d. If caught in chlorine gas without a mask, hold your breath and go cross wind until you are out of range of the gas. Place a handkerchief over your nose in small quantities of chlorine.

e. Report all chlorine leaks for repair immediately. Make temporary repairs with tape if possible.

f. In case of a major chlorine leak, the source of chlorine gas must be stopped.

Notify the Chlorine Plant immediately if the pressure on the chlorine manifold exceeds 30 psig. Cut off liquid chlorine from the car.

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2. Thermal Burns

Cause and Action to Prevent

Contact with hot uninsulated product lines at the chlorinators and still areas.

Contact with uninsulated steam lines and open steam.

Contact with hot Aroclors from broken lines or leaks.

Contact with open flames at stills or from heating lines in the department.

Action to Prevent

a. Know that contact with equipment and product will cause a thermal burn due to the high temperatures. Make changes in operations with this hazard in mind.

b. Know the first aid treatment for burns. Cold Water Treatment (See Appendix A - Emergency Section).

c. Wear gloves and long sleeve shirts with the sleeves rolled down when operating. Gloves and clothing can make the difference between first and second degree burns.

d. Report uninsulated lines for repair of insulation.

e. Use only steam lines with hose and hose clamps in good condition.

f. The following operations are hazardous and should be done with care:

(1) Catching samples at the Aroclor chlorinator circulating pumps.

(2) Sampling the Solid Aroclor still receiver.

(3) Drawing bottoms on the Aroclor stills.

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Cause and Action to Prevent

3. Explosion

An explosion could occur in the chlorinators by slugging liquid chlorine to the distributor. Slugs of liquid chlorine could react fast enough to cause excessive pressure in the vessel. A rupture of the chlorinator could occur.

Action to Prevent

a. Observe operation of the chlorine vaporizer and do not let liquid chlorine get into the rotameters. Pipe lines will be frosted.

b. In case chlorine feed lines are frosted, close liquid chlorine feed valve to the vaporizer. Check steam addition to the vaporizer. Do not start up until source of trouble has been located.

c. Do not close valve in water discharge line from the chlorinator coil.

d. Observe temperature of the chlorinator periodically and be sure it is not too hot (180°C. maximum).

4. Falls

Slipping on cement floors, stairs, Aroclor on floor, ice conditions; tripping over objects (hose, pipe, valve handles, etc.); or losing footing on ladders, etc., can cause falls.

Action to Prevent

a. The majority of minor, serious, and near-miss injuries in the Aroclor Dept. are the result of falls. Prevention is always within the ability of the operator by use of expert operating practices.

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Cause and Action to Prevent

4. Falls (Contd.)

b. The following items should be done:

(1) Return hose to rack after using.

(2) Keep operating areas clean of all foreign objects.

(3) Return ladders to racks when not in use.

(4) Keep gloves on and hands out of pockets, especially going up stairs.

(5) Place guards around any area that presents a hazard that should be guarded.

c. Poor lighting due to burned out bulbs should be corrected at once. Poor lighting due to inadequate facilities should be reported.

d. Spills must be cleaned up immediately following their occurrence. Report any spill that cannot be cleaned up within the shift to the Chief Operator. Spills are to be reported in the log book.

5. Fires

Fires can occur by:

Biphenyl, Santowax R, or Santowax C ignition.

Chlorine problems in the vaporizer allowing reaction with steam to release hydrogen.

Furnace burner backfire.

Wood, rags, or paper on hot lines.

Sparks from welding apparatus of open flames.

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Cause and Action to Prevent

5. Fires (Contd.)

Action to Prevent

a. Area must be clear of trash or flammable materials. Use trash skips and cans.

b. Smoke only in areas so designated.

c. Use spark producing equipment only with a fire permit and proper inspection.

d. Use care in lighting gas torch or the still furnaces.

e. Fire fighting equipment includes:

(1) Two wheeled dry powder units.

(2) Hose house with 200 ft. of hose.

(3) Two dry powder hand extinguishers, One CO_2 hand extinguisher.

(4) Two 3/4" water hoses.

(5) Hose connection north of Santowax.

(6) Scott Air Paks.

(7) Fire truck in fire house.

f. Observe visitors in the plant and be sure they observe safety rules.

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6. The following is a list of chemicals handled in the Aroclor Plant operations and the precautions to be taken during their handling:

a. Chlorine Gas

This is a corrosive gas which is toxic. Leaks or back pressure can occur and liberate chlorine gas in the area. Operators should have their cartridge type respirators handy at all times while in the area. Use of gas masks is explained in Section B.1.

If you are caught without a gas mask, and large amount of chlorine gas are liberated, hold your breath and go cross wind until you are out of range of the gas. Once out of the area, obtain an emergency gas mask and return to the area and correct the trouble.

A victim of chlorine gas fumes must be removed as quickly as possible from the gaseous area. Place patient on his back with head and back elevated. Milk may be used in mild cases as a relief from throat irritation. If the patient has stopped breathing, start artificial respiration immediately.

b. Biphenyl

Biphenyl is a flammable material which will burn. Burning should not be done in the presence of Biphenyl or Biphenyl vapors. The melting point is 68.7°C., and the auto ignition temperature is 258°C. Inhalation of Biphenyl fumes is not recommended, since it can cause a drugged effect on the person.

c. Santowax R

Santowax R is a flammable material which will burn. It is relatively non-toxic to human beings. However, the vapors of Santowax R are irritating to the mucous membranes and bronichial tract. Prolonged breathing of the vapors should be avoided. The melting point is 140°C.

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6. (Continued)

d. Santowax C	Same as Santowax R, since it is the crude material prior to distillation.
e. Ferric Chloride	Ferric Chloride is a black-brown solid. It causes only slightly irritating effects on the skin or mucous membranes. When heated it will decompose and release toxic fumes of Chlorine. It will react with water to produce toxic and corrosive HCl fumes.
f. Attapulgus Earth	This material is a dried earth. No danger in handling. Wash off with water to clean.
g. Hydrated Lime	No particular hazard in handling this material. The dust is irritating to the eyes and skin, and should be washed off with water.
h. Crude Aroclors	Crude Aroclors are hot, since all are handled in steam traced or jacketed lines. They can easily cause thermal burns in contact with the skin. Prior to air blowing, the material has HCl fumes entrained in it which are irritating to the skin or mucous membranes.
i. Hydrogen Chlorine Gas	This is a corrosive gas which is toxic. It is irritating to the mucous membranes, to the eyes, and to the respiratory tract. It will react with water to form Hydrochloric Acid.
j. Still Bottoms or Residue	Fumes from still bottoms are toxic. They are extremely irritating to the mucous membranes, to the eyes, and respiratory tract.

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7. Toluene	Toxicology: Acute poisoning, resulting from exposure to high concentrations of the vapors, is rare with Toluene. Inhalation of 200 ppm of Toluene for eight hours may cause impairment of coordination and reaction time; with higher concentrations (up to 800 ppm) these effects are increased and are observed in a shorter time. Toluene is handled in outside area and there is no high concentration of vapors. Fire Hazard: Dangerous when exposed to heat and flame. Care should be taken not to heat Toluene above 100°C from use of steam coil in mix tank.
8. Xylene	Same as Toluene.
9. Trichlorobenzene	Toxicity: When heated to decomposition, trichlorobenzene emits highly toxic fumes of chlorides; can react with oxidizing materials. Fire Hazard: Slight; when exposed to heat and flame. Care should be taken not to heat trichlorobenzene above 120°C from use of steam coil in mix tank.
10. Tritetrachlorobenzene	Same as Trichlorobenzene.

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HOUSEKEEPING

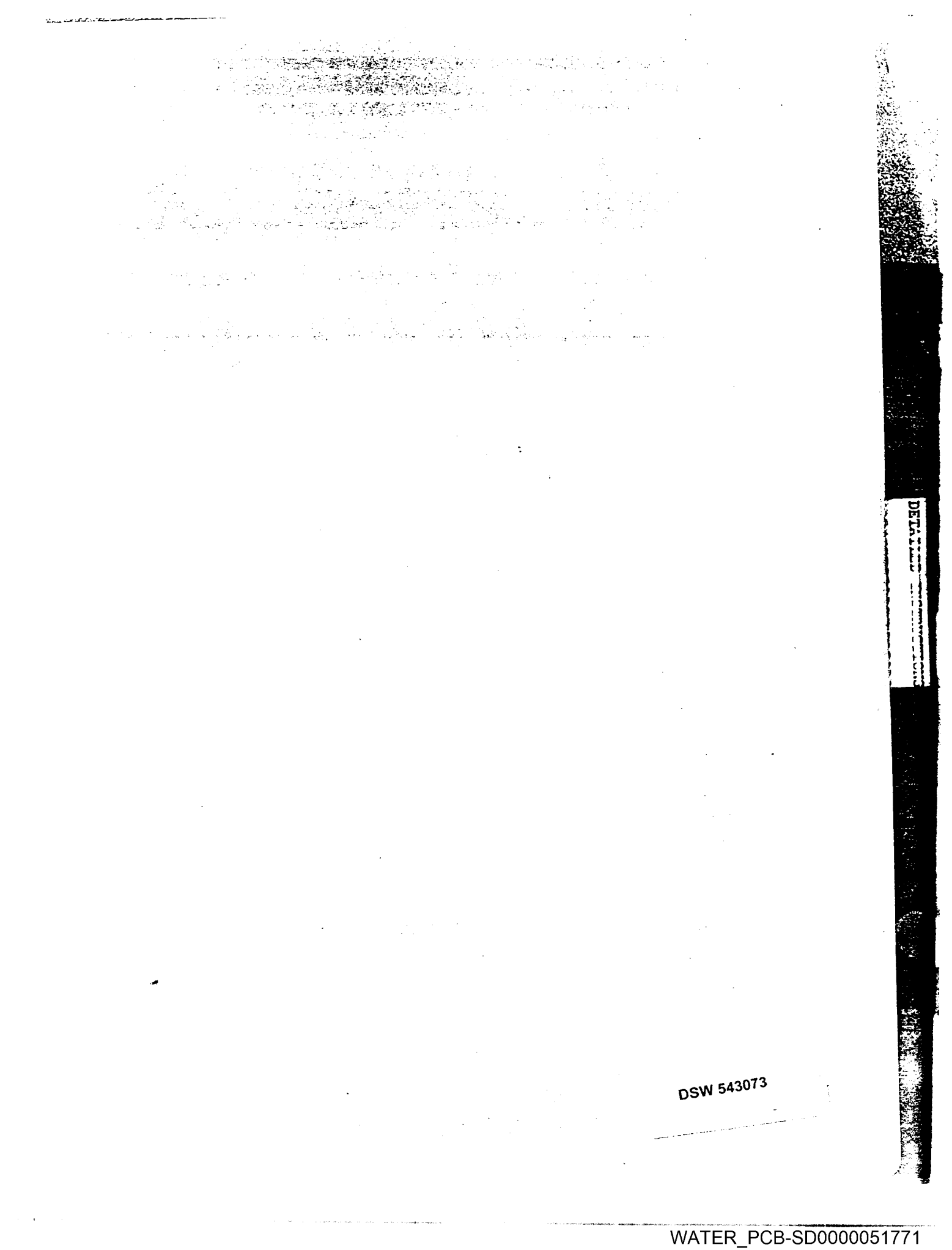
The Aroclor chlorinator and still operators are responsible for housekeeping during their shift. Good housekeeping is the mark of good operations, safety practices, quality, and costs.

Housekeeping duties are equal in importance with all other operating duties.

Poor Practices	Action to Prevent
1. Hoses, valve handles, dip stocks, rags, and other material on ground or floor.	a. Replace after use. b. Have place to store all necessary operating aids. c. Report needs to supervision.
2. Product Leaks.	a. Tighten valve packing glands and flange bolts. b. Report leaks to Chief Operator for maintenance alteration.
3. Trash and Crude Drums.	a. Contact Chief to have drums moved from area. b. Use trash skip in area.
4. Product spills or clean out messes.	a. Prevent necessity of clean-out by keeping tracing, insulation, or jacket in good repair by getting items turned in for maintenance work. b. Spills must be cleaned up when they are made. Clean up will continue through the following shifts to finish the job.

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C. DETAILED INSTRUCTIONS

PROCESS FUNCTION OUTLINE
AROCLOR DEPARTMENT

I. PYRANOL MIXES

1.1 Scope

This covers the production of the various Pyranol Mixes.

1.2 Description of Process

Distilled Aroclors, and other raw materials, are pumped to one of two pyranol mix tanks. These raw materials may come from a filtrate tank, storage tank, tank car, or drums. (See Table 1 for raw materials used in the production of each product or mix). Each mix tank is equipped with an agitator for thorough mixing. Quality of a pyranol mix is analyzed by the Laboratory and when in specification, it is loaded into tank cars or drawn into suitable containers.

II. PROCESS DIAGRAM

Attached.

III. DESCRIPTION OF PROCESS

3.1 Charging of Mix Tanks

A. Charges for Large (12,000 Gal.) Mix Tank

1. Pyranol A13B3B, Inerteen PPO, Inerteen 54201-KA, Therminol FR-0, and Therminol FR-Lo Temp., are produced in the large mix tank as these products are sold in tank car quantities as well as in drum lots.

2. Sampling of TCB and TTCB cars

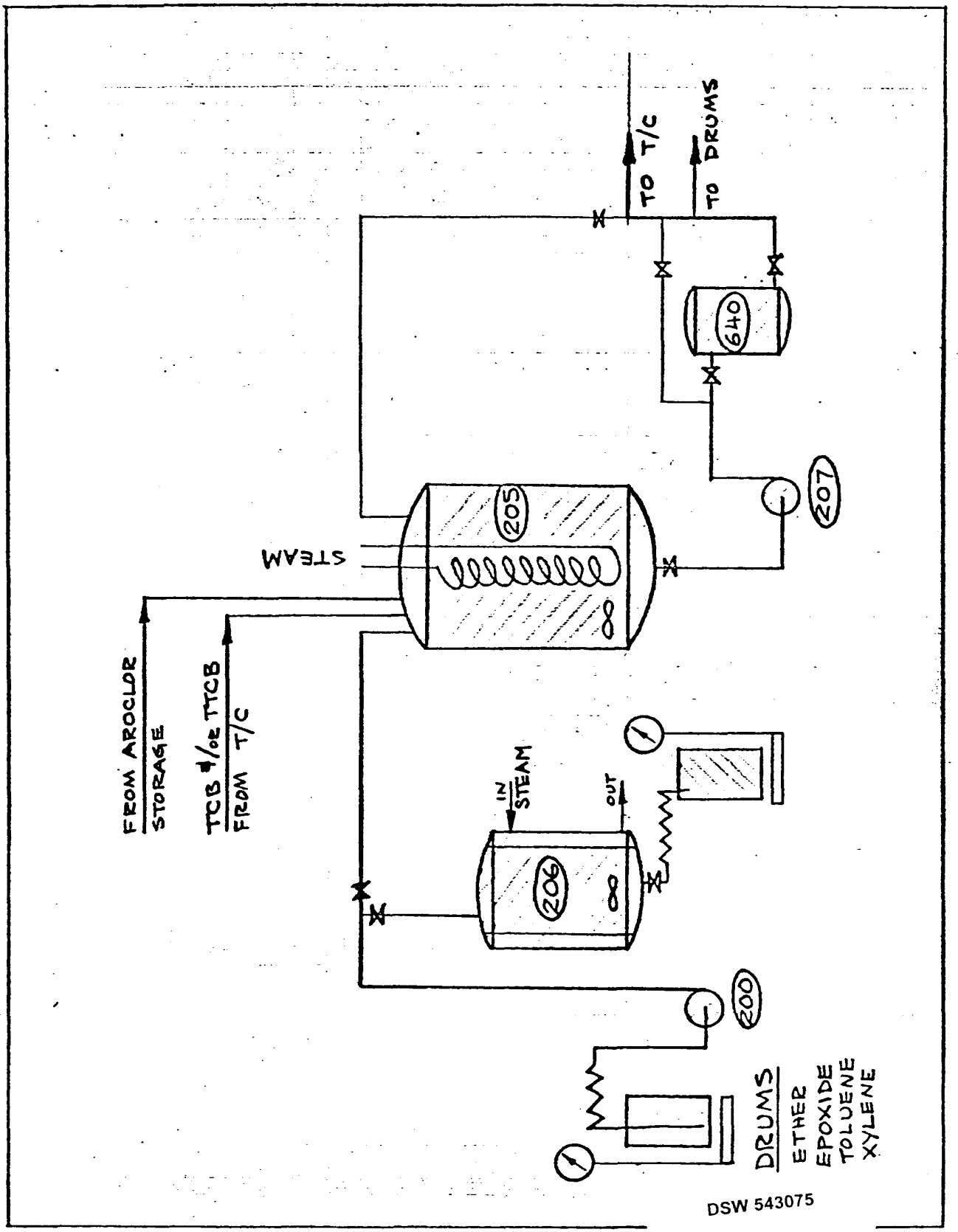
   (a) After car has been spotted, by railroad crew or by use of our car spotter at HB-40 dock, open dome and take 2-1/2 gallon samples from car.

   (b) Label samples for complete analysis and send to the Laboratory.

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BY VRH DATE 24Nov67 SUBJECT PYRANOL MIXES FLOW SHEET SHEET NO 1 OF 1

CHKD. BY ..... DATE ..... JOB NO .....



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3. Transfer of Materials to Mix Tank

(a) Connect TCB or TTCB car to the unloading pump. Ground car, line, and pump.

(b) Set valves in line from car to the mix tank.

(c) Check mix tank to be sure it is empty.

(d) Check bottom outlet valve on tank to be sure it is closed.

(e) Check instruction sheet, as prepared by Supervision, for quantities of raw materials needed.

(f) Start unloading pump and transfer TCB or TTCB to mix tank as specified after receiving okay from the Laboratory. Record tank measurement (outage) after transfer.

(g) After this transfer has been made, blow out unloading line with nitrogen or air.

(h) Circulate storage tank, containing Aroclor to be used, for a minimum of one hour.

(i) Take 1/2 gallon sample of the Aroclor from storage tank and send to the Laboratory for analysis (Sp. Gr. and resistivity).

(j) Set valves in line from Aroclor storage tank to the mix tank.

(k) Start storage tank pump and transfer Aroclor to mix tank as specified, after receiving okay from the Laboratory. Record tank measurement (outage) after transfer.

(l) Add dry attapulgus earth, as specified, to mix tank through nozzle on top of tank by use of a funnel and hand scoop.

4. Agitation,Circulation and Sampling

(a) Start agitator and agitate tank for two hours while using recycle line and by-passing the filter.

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(b) Set lines to filter press and circulate material through press for 30 minutes.

(c) After circulating for 30 minutes, take 1/2 gallon sample. Label sample as specified on instruction sheet, and send to the laboratory.

(d) Continue agitating and circulating the mix until results are received from the laboratory. (If the sample is out of specifications an adjustment must be made).

(e) If the above sample is okay by the laboratory, then add PPO or EP-221 as specified on the instruction sheet.

(f) Set lines to filter press and circulate material through press for 30 minutes.

(g) After circulating for 30 minutes, take three 1/2 gallon samples. Label samples for complete analysis and send to the laboratory.

(h) If the material is okay by the laboratory it is loaded into a tank car or drawn out into designated containers.

(i) When a tank car is loaded take two 1/2 gallon samples from car for lot number. When drums are filled take two 1/2 gallon samples from drums for lot number.

B. Charges for Small (2,000 gallon) Mix Tank

1. Pyranols 1254 - 10% Toluene, 1260 - 10% Toluene, 1262 - 10% Toluene, 1262 - 10% Xylene, Santicizer 794, and a Special Aroclor Blend are produced in the small mix tank.

2. Transfer of materials to mix tank.

(a) Circulate storage tank, containing Aroclor to be used, for a minimum of one hour.

(b) Take 1/2 gallon sample of the Aroclor from storage tank and send to the laboratory for analysis.

(c) Set valves in line from Aroclor storage tank to the mix tank.

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(d) Get accurate measurement of Aroclor storage tank.

(e) Check instruction sheet, as prepared by supervision for quantities of raw materials needed.

(f) Start storage tank pump and transfer desired amount of Aroclor to the mix tank after receiving okay from the laboratory.

(g) Place Toluene or Xylene drums to be used near small pump under mix tank.

(h) Sample each drum of Toluene or Xylene, using thief, to be sure it is clear and free of water.

(i) Set valves in line from Toluene pump to mix tank.

(j) Place pipe, attached to flexible hose at pump, in drum, ground drum, and start pump.

(k) Change drums as necessary in order to pump desired quantity into mix tank.

(l) Start agitatorand agitate for one hour.

(m) Take 1/2 gallon sample. Label sample for proper identification and send to the laboratory for analysis.

(n) Continue agitating the mix until results are received from the laboratory. (If the sample is out of specifications, an adjustment must be made).

(o) If the above sample is okay by the laboratory, then draw out in Aroclor drums.

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IV. COMMENTS ON PROCESS

Do not allow temperature on mix tanks to exceed 120°C. TCB and TTCB will begin to vaporize above this temperaute. The large pyranol mix tank is calibrated in outage whereas other tanks are calibrated in innage.

All drums filled with pyranol mixes containing toluene are stenciled TOLUOL rather than Toluene.

When a tank car is loaded from the large pyranol mix tank, samples are taken from the car and analyzed for lot number. If the remaining material in the mix tank is drawn out in drums, then samples must be taken from the drums and analyzed for another lot number.

The area where pyranol mixes are produced is considered a part of the Aroclor Department and these mixes are made by Aroclor operators.

The large Pyranol tank can be blown with nitrogen whenever moisture content is too high.

It has been extremely difficult to get Inerteen 54201-KA to meet electrical specs at times. To prevent recurrence the following techniques are followed and included on the instruction sheet.

1. TCB would be earth treated to bring power factor below a value of ten.

2. TCB plus 1254 mix would be earth treated until power factor was below a value of one.

3. Ether would be added only after earth had been filtered out and filter cleaned.

4. Tank car would be loaded only when power factor was a value of three max.

5. Most important, nitrogen would be blown into mix tank through the bottom nozzle during the earth treatment to supplement the extremely poor agitation system presently employed.

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TABLE I

PRODUCT	Aro. % 1242	Aro. % 1248	Aro. % 1254	Aro. % 1260	Aro. % 1262	Aro. % 4465	% Tolu.	% Xylene	% PBO	% TCB	% TTCB	% Earth	% EP-221
1254 - 10% Toluene			90.00				10.00						
1260 - 10% Toluene				90.00			10.00						
1262 - 10% Toluene					90.00		10.00						
1262 - 10% Xylene					90.00			10.00					
Therminol FR-Lo Temp.	50.00										50.00		
A13B3B				45.00							55.00	0.03	0.125
Inerteen PPO				60.00					0.20	40.00		0.01	
Inerteen 54201-KA			70.00						0.20	30.00		0.03	
Therminol FR-0	80.00										20.00		
Santicizer 794		50.00		50.00									
Aroclor Blend			85.00			15.00							
Aroclor Blend	28.00	72.00											

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CALIBRATION OF PYRANOL MIXING TANK

Note: Outages measured from a point 10" above face of flange on second 2" nipple west of manhole.

Outage In	Volume Gal.	Outage In	Volume Gal.	Outage In	Volume Gal.	
18	12,565	67	8,020	116	3,372	
19	12,473	68	7,925	117	3,279	
20	12,382	69	7,830	118	3,185	
21	12,290	70	7,734	119	3,092	
22	12,199	71	7,639	120	2,999	
23	12,107	72	7,544	121	2,906	
24	12,016	73	7,449	122	2,813	
25	11,924	74	7,354	123	2,720	
26	11,833	75	7,258	124	2,626	
27	11,741	76	7,163	125	2,533	
28	11,650	77	7,068	126	2,440	
29	11,558	78	6,973	127	2,347	
30	11,467	79	6,877	128	2,254	
31	11,375	80	6,782	129	2,160	
32	11,284	81	6,687	130	2,067	
33	11,192	82	6,591	131	1,974	
34	11,101	83	6,497	132	1,881	
35	11,009	84	6,401	133	1,788	
36	10,918	85	6,306	134	1,695	
37	10,826	86	6,211	135	1,601	
38	10,735	87	6,116	136	1,508	
39	10,643	88	6,021	137	1,415	
40	10,552	89	5,925	138	1,320	
41	10,460	90	5,830	139	1,225	
42	10,369	91	5,735	140	1,130	
43	10,277	92	5,640	141	1,036	(dish)
44	10,183	93	5,546	142	942	
45	10,089	94	5,451	143	852	
46	9,995	95	5,357	144	772	
47	9,901	96	5,262	145	698	
48	9,807	97	5,168	146	627	
49	9,713	98	5,073	147	558	
50	9,619	99	4,978	148	492	
51	9,525	100	4,884	149	428	
52	9,431	101	4,789	150	367	
53	9,337	102	4,695	151	312	
54	9,243	103	4,600	152	265	
55	9,149	104	4,505	153	220	
56	9,054	105	4,411	154	182	
57	8,960	106	4,316	155	148	
58	8,866	107	4,222	156	117	
59	8,772	108	4,127	157	87	
60	8,678	109	4,033	158	62	
61	8,584	110	3,938	159	40	
62	8,490	111	3,843	160	25	
63	8,396	112	3,749	161	12	
64	8,302	113	3,654	162	5	
65	8,208	114	3,560	163	0	
66	8,114	115	3,465			

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NEW PYRANOL MIX TANK

Tank length measured from top of the flange to the bottom of the dish -119
Innage and outage measurements are from the top of the flange.

Innage Inches	Gals.	Innage Inches	Gals.	Innage Inches	Gals.	Outage Inches	Gals.	Outage Inches	Gals.	Outage Inches
2	12	53	1005	104	2025	10	2115	60	1125	110
3	33	54	1025	105	2045	11	2101	61	1105	111
4	44	55	1045	106	2065	12	2085	62	1085	112
5	56	56	1065	107	2085	13	2065	63	1065	113
6	69	57	1085	108	2101	14	2045	64	1045	114
7dish	85	58	1105	109	2115	15	2025	65	1025	115
8	105	59	1125			16	2005	66	1005	116
9	125	60	1145			17	1985	67	985	117
10	145	61	1165			18	1965	68	965	118
11	165	62	1185			19	1945	69	945	119
12	185	63	1205			20	1925	70	925	
13	205	64	1225			21	1905	71	905	
14	225	65	1245			22	1885	72	885	
15	245	66	1265			23	1865	73	865	
16	265	67	1285			24	1845	74	845	
17	285	68	1305			25	1825	75	825	
18	305	69	1325			26	1805	76	805	
19	325	70	1345			27	1785	77	785	
20	345	71	1365			28	1765	78	765	
21	265	72	1385			29	1745	79	745	
22	385	73	1405			30	1725	80	725	
23	405	75	1445			31	1705	81	705	
24	425	76	1465			32	1685	82	685	
25	445	77	1485			33	1665	83	665	
26	465	78	1505			34	1645	84	645	
27	485	79	1525			35	1625	85	625	
28	505	80	1545			36	1605	86	605	
29	525	81	1565			37	1585	87	585	
31	565	82	1585			38	1565	88	565	
32	585	83	1605			39	1545	89	545	
33	605	84	1625			40	1525	90	525	
34	625	85	1645			41	1505	91	505	
35	645	86	1665			42	1485	92	485	
36	665	87	1685			43	1465	93	465	
37	685	88	1705			44	1445	94	445	
38	705	89	1725			45	1425	95	425	
39	725	90	1745			46	1405	96	405	
40	745	91	1765			47	1385	97	385	
41	765	92	1785			48	1365	98	365	
42	785	93	1805			49	1345	99	345	
43	805	94	1825			50	1325	100	325	
44	825	95	1845			51	1305	101	305	
45	845	96	1865			52	1285	102	285	
46	865	97	1885			53	1265	103	265	
47	885	98	1905			54	1245	104	245	
48	905	99	1925			55	1225	105	225	
49	925	100	1945			56	1205	106	205	
50	945	101	1965			57	1185	107	185	
51	965	102	1985			58	1165	108	165	
52	985	103	2005			59	1145	109	145	

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WATER_PCB-SD0000051780

APPENDIX - INDEX

Instruction Sheets for:

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DSW 543083

WATER_PCB-SD0000051781

TO: CHIEF OPERATORS Date:_____

INSTRUCTIONS FOR INERTEEN PPO

LOT NO._____

Initial as Completed

1. Check the large Pyranol mix tank and be sure it is clean. Drain any material into a drum.

2. Pump TCB from Tank Car _____ to Pyranol tank, measuring _____" outage.

3. Pump 1260 from No. _____ storage tank to Pyranol tank until you have a _____" outage in tank.

4. Add _____pounds of earth to tank and start agitating.

5. Agitate and circulate, by-passing filter, for two hours.

6. Blow tank contents with nitrogen to aid agitation and/or lower water content.

7. Circulate through filter for 30 minutes, then catch one-half gallon sample.

8. Label the sample INERTEEN PPO. Send to Laboratory to check:

				Specs.
Specific Gravity				1.560 - 1.568 @ 15.5°C
Refractive Index				1.6137-1.6147 @ 25°C
Moisture				30 ppm
Chlorides				0.10 ppm

9. Continue agitating and circulating the mix until results of the analysis are received from Lab. (If the sample is out of specs, make adjustment.)

10. If sample is okay by the Lab, then clean the filter.

11. Add _____pounds of PPO (Glycidyl Phenyl Ether).

DSW 543084

WATER_PCB-SD0000051782

INSTRUCTIONS FOR INERTEEN PPO

LOT NO._____

Initial as Completed

12. After the PPO is added, agitate and circulate for two hours.

13. Circulate through filter for 30 minutes. Take three one-half gallon samples, label INERTEEN PPO LOT NO._____ for complete analysis and send to Lab.

14. If okay - we will load:

    Tank Car

    Remainder in drums: 65 lbs.
    360 lbs.
    674 lbs.

NOTE: PPO is toxic, avoid contact with skin and eyes. If any is splashed in eyes, wash with water and report to dispensary. Wash off any spills on skin with alcohol and follow with soap and water. Wear goggles and gloves when handling.

August 1965

Rev. 1 - March 1967

DSW 543085

WATER_PCB-SD0000051783

TO: CHIEF OPERATORS DATE:_____

INSTRUCTIONS FOR INERTEEN 54201-KA

LOT NO._____

Initial as Completed		
☐	1.	Check the large Pyranol mix tank and be sure it is clean. Drain any material into a drum.
☐	2.	Pump TCB from Tank Car _____ to Pyranol tank measuring _____" outage.
☐	3.	Earth treat to bring power factor @ 60 cycles to 10 max.
☐	4.	Pump 1254 from No. _____ storage tank to Pyranol tank until you have a _____" outage in tank.
☐	5.	Add 10 pounds of earth to tank and start agitating.
☐	6.	Agitate and circulate, by-passing filter for two hours. Blow tank contents with nitrogen to aid agitation and/or lower water content.
☐	7.	Circulate through filter for 30 minutes, then catch one-half gallon sample.
☐	8.	Label the sample Inerteen 54201-KA. Send to Lab to check for adding ether.
☐	9.	Continue agitating and circulating the mix until results of the analysis are received from Lab. (If the sample is out of specs, make adjustment). (If power factor @ 60 cycles is more than 1.0, earth treat with 10 lbs. by-passing filter. Take sample after two hours circulate and agitate, and 30 minutes filtering).
☐	10.	If sample is okay by the Lab, then clean the filter.
☐	11.	Add _____ pounds of PPO (Glycidyl Phenyl Ether).
☐	12.	After the PPO is added, agitate and circulate for one hour.
☐	13.	Circulate through filter for 30 minutes. Take three one-half gallon samples, label Inerteen 54201-KA, Lot No. _____, for complete analysis and send to Lab.
☐	14.	If okay, (Power factor at 60 cycles must be 3.0 or lower) we will load tank car, remainder in drums 674 pounds.

NOTE: PPO is toxic, avoid contact with skin and eyes. If any is splashed in eyes, wash with water and report to dispensary. Wash off any spills on skin with alcohol and follow with soap and water. Wear goggles and gloves when handling.

DSW 543086

WATER_PCB-SD0000051784

INERTEEN 64201-KA - SPEC SHEET

	TCB Spec.			1254 Spec.		Mix Spec.		Loading Spec.		Final Spec.	
Date											
Time											
Lot No.											
Car No.											
Specific Gravity	1.460 1.477			1.495 1.505		1.518 1.528		1.518 1.528		1.518 1.528	
Refractive Index	1.5680 1.5715			--		1.6153 1.6173		1.6153 1.6173		1.6153 1.6173	
Moisture PPM	75			35		30		30		30	
Power Factor 60 cycles 100°C	10			--		1.0		3.0		5.0	
Power Factor 1 KC 100°C				--						0.5	
Resistivity				2000				800		500	
Chlorides PPM	0.1			--		0.05		0.05		0.05	
Viscosity SUS	--			--		58-62		58-62		58-62	
HST				--		--		--		--	
Munch				--		--		--		--	
Ether Lot No.	--			--		--					
Ether %	--			--		--		0.18 0.23		0.18 0.22	

DSW 543087

WATER_PCB-SD000051785

TO: CHIEF OPERATORS Date:_____

INSTRUCTIONS FOR PYRANOL A13B3B

LOT NO._____

Initial as Completed

1. Check the large Pyranol mix tank and be sure it is clean. Drain any material into a drum.
2. Pump TTCB from Tank Car _____ to Pyranol tank, measuring _____" outage.
3. Pump 1260 from No._____ storage tank to Pyranol tank until you have a _____" outage in tank.
4. Add _____ pounds of earth to tank and start agitating.
5. Agitate and circulate, by-passing filter for two hours.
6. Blow tank contents with nitrogen to aid agitation and/or lower water content.
7. Circulate through filter for 30 minutes, then catch one-half gallon sample.
8. Label the sample PYRANOL A13B3B. Send to Laboratory to check:

				Specs.
Specific Gravity				1.563 - 1.571 @ 15.5°C
Refractive Index				1.6075-1.6085 @ 25°C
Moisture				30 ppm
Chlorides				0.10 ppm

9. Continue agitating and circulating the mix until results of the analysis are received from Lab. (If the sample is out of specs, make adjustment.)
10. If sample is okay by the Lab, then clean the filter.
11. Add _____pounds of EP-221.
12. After the EP-221 is added, agitate and circulate for two hours.

DSW 543088

WATER_PCB-SD0000051786

INSTRUCTIONS FOR PYRANOL A13B3B

LOT NO._____

Initial as Completed

13. Circulate through filter for 30 minutes. Take three one-half gallon samples, label Pyranol A13B3B, Lot No. _____ for complete analysis and send to Lab.

14. If okay we will load:

Tank Car

Remainder in drums: 65 lbs.
360 lbs.
374 lbs.

DSW 543089

WATER_PCB-SD0000051787

TO: CHIEF OPERATORS Date:_____

INSTRUCTIONS FOR THERMINOL FR-LO TEMP.

LOT NO._____

Initial as Completed

1. Check the large Pyranol mix tank and be sure it is clean. Drain any material into a drum.

2. Pump TTCB from Tank Car _____ to Pyranol tank, measuring _____" outage.

3. Pump 1242 from No. _____ storage tank to Pyranol tank until you have a _____" outage in tank.

4. Agitate and circulate, by-passing filter for two hours.

5. Circulate through filter for 30 minutes, then catch one-half gallon sample.

6. Label the sample FR-LO TEMP. Send to Laboratory to check:

				Specs.
Specific Gravity				1.431 - 1.452 @ 25°C
Moisture				75 ppm
Viscosity				8.0 - 9.0 cp

7. Continue agitating and circulating the mix until results of the analysis are received from Lab. (If the sample is out of specs, make adjustment.)

8. If sample is okay by Lab., take two one-half gallon samples, label FR-Lo Temp., Lot No._____, for complete analysis and send to Lab.

9. If okay, we will load:

Tank Car

Remainder in drums: 55 lbs.
600 lbs.

DSW 543090

WATER_PCB-SD0000051788

TO: CHIEF OPERATORS Date:_____

INSTRUCTIONS FOR THERMINOL FR-0

LOT NO._____

Initial as Completed

1. Check the large Pyranol mix tank and be sure it is clean. Drain any material into a drum.

2. Pump TTCB from Tank Car _____ to Pyranol tank, measuring _____" outage.

3. Pump 1242 from No._____ storage tank to Pyranol tank until you have a _____" outage in tank.

4. Agitate and circulate, by-passing filter for two hours.

5. Circulate through filter for 30 minutes, then catch one-half gallon sample.

6. Label the sample FR-0. Send to Laboratory to check:

				Specs.
Specific Gravity				1.400 - 1.421 @ 25°C
Moisture				75 ppm
Viscosity				10.5 - 12.5 cp

7. Continue agitating and circulating the mix until results of the analysis are received from Lab. (If the sample is out of specs, make adjustment.)

8. If sample is okay by Lab, take two one-half gallon samples, label Therminol FR-0, Lot No._____ for complete analysis, and send to Lab.

9. If okay, we will load:

   Tank Car

   Remainder in drums: 60 lbs.
   600 lbs.

NOTE: PPO is toxic, avoid contact with skin and eyes. If any is splashed in eyes, wash with water and report to dispensary. Wash off any spills on skin with alcohol and follow with soap and water. Wear goggles and gloves when handling.

DSW 543091

WATER_PCB-SD0000051789

TO: CHIEF OPERATORS Date:_____

INSTRUCTIONS FOR AROCLOR 1254-4465 BLEND

LOT NO._____

Initial as Completed

1. Transfer 1254 from No. _____ storage tank to the small mix tank (No. 2). Reading now _____%. Reading after transfer should be _____% in No. _____ storage tank. (Need 1,540 gallons)

2. Have steam on No. 2 Pyranol mix tank if necessary to warm up 1254.

3. Add _____pounds of 4465 (_____ drums at 400 lbs. each, plus _____lbs.) Add slowly - keep agitator running. Due to fumes, it may be necessary to cool tank with water.

4. Close manhole when finished. Agitate material for 8 hours. You will probably need to put steam on tank jacket.

5. After 8 hours, take one-half gallon sample.

6. Label the sample Aroclor 1254-4465 Blend. Send to Laboratory to check:

				Specs:
Specific Gravity				1.512 - 1.526 @ 65°C
Refractive Index				1.6400-1.6420
Viscosity at 210°F				49 - 55
Color				2 Max.

7. If material is in specification, take two one-half gallon samples from drum-out line.

8. Drum out in 650 lb. drums net weight. Use a filter cloth to drum out through.

DSW 543092

WATER_PCB-SD0000051790

TO: CHIEF OPERATORS Date:_____

INSTRUCTIONS FOR AROCLOR 1248-1242 BLEND

LOT NO._____

Initial as Completed

1. Empty No._____ storage tank.

2. Pump _____ gallons of 1248 from No. _____ storage tank to No._____ storage tank.

3. Pump _____gallons of 1242 from No. _____ storage tank to No. _____ storage tank.

4. Circulate tank for two hours and send sample to Lab. for Aroclor 1248-1242 Blend.

	Specs.
Specific Gravity	1.430 - 1.440 @ 25°C

5. If out of specs, make an adjustment.

6. If okay we will load tank car _____.

7. Take two one-half gallon samples from car or drum-out line. Label Aroclor 1248-1242 Blend, Lot No._____, and send to Lab.

DSW 543093

WATER_PCB-SD0000051791

TO: CHIEF OPERATORS Date:_____

INSTRUCTIONS FOR SANTICIZER 794

LOT NO._____

Initial as Completed

1. Empty No. _____ storage tank.

2. Pump _____ gallons of 1260 from No. _____ storage tank to No. _____ storage tank.

3. Pump _____ gallons of 1248 from No. _____ storage tank to No. _____ storage tank.

4. Circulate tank for two hours and send sample to Laboratory for:

	Specs.
Specific Gravity	1.6375-1.6395

5. If out of specs., make an adjustment.

6. If okay we will load:

   Tank Car

   Remainder in Drums: 600 lbs.

7. Take two one-half gallon samples from car or drum-out line. Label Santicizer 794, Lot No. _____, and send to Lab.

DSW 543094

WATER_PCB-SD0000051792

TO: CHIEF OPERATORS Date:_____

INSTRUCTIONS FOR AROCLOR 1254 - 10% TOLUENE

LOT NO. _____

(Send one-half gallon 1254 and one-half gallon Toluene to Lab for Pilot Batch to determine spec.)

Initial as Completed

1. Pump _____gallons of 1254 from No._____ storage tank to small Pyranol mix tank.

2. Add _____pounds of Toluene to tank (_____full drums). Thief each drum to be sure it is clear and free of water. BE SURE that Toluene pump is connected to line to small tank. Check out line before starting pump.

3. Agitate for one hour.

4. Take one-half gallon sample and send to Lab for 1254-10% Toluene. If out of spec, make adjustment.

	Spec.
Specific Gravity	

5. If okay, draw out in 60 lbs. and/or 600 lbs. Aroclor drums.

6. Stencil drums Aroclor 1254-10 PCT Toluol, Lot No._____.

NOTE: Be sure that the Pyranol Tank is empty before starting mix..

DSW 543095

WATER_PCB-SD0000051793

TO: CHIEF OPERATORS Date:_____

INSTRUCTIONS FOR AROCLOR 1260 - 10% TOLUENE

LOT NO. _____

Initial as Completed

1. Pump _____ gallons of 1260 from No. _____ storage tank to small Pyranol mix tank.

2. Add _____ pounds of Toluene to tank (_____ full drums). Thief each drum to be sure it is clear and free of water.

   BE SURE that Toluene pump is connected to line to small tank. Check out line before starting pump.

3. Agitate for one hour.

4. Take one-half gallon sample and send to Laboratory for 1260 - 10% Toluene. If out of spec, make adjustment.

	Spec.
Specific Gravity	1.481-1.491 @ 40°C

5. If okay, draw out in 60 lb. and/or 600 lb. Aroclor drums.

6. Stencil drums Aroclor 1260 - 10 PCT Toluol, Lot No._____.

NOTE: Be sure that the Pyranol Tank is empty before starting mix.

DSW 543096

WATER_PCB-SD0000051794

TO: CHIEF OPERATORS Date:_____

INSTRUCTIONS FOR AROCLOR 1262 - 10% TOLUENE

LOT NO._____

Initial as Completed

1. Pump _____ gallons of 1262 from No. _____ storage tank to small Pyranol mix tank.

2. Add _____ pounds of Toluene to tank (_____ full drums). Thief each drum to be sure it is clear and free of water.

   BE SURE that Toluene pump is connected to line to small tank. Check out line before starting pump.

3. Agitate for one hour.

4. Take one-half gallon sample and send to Lab for 1262 - 10% Toluene. If out of spec, make adjustment.

	Spec.
Specific Gravity	1.504 - 1.514 @ 40°C

5. If okay, draw out in 60 lb. and/or 600 lb. Aroclor drums.

6. Stencil drums Aroclor 1262 - 10 PCT Toluol, Lot No._____.

NOTE: Be sure that the Pyranol Tank is empty before starting mix.

DSW 543097

WATER_PCB-SD0000051795

TO: CHIEF OPERATORS Date:_____

INSTRUCTIONS FOR AROCLOR 1262 - 10% XYLENE

LOT NO. _____

(Send one-half gallon 1262 and one-half gallon Xylene to Lab for Pilot Batch to determine specification.)

Initial as Completed

1. Pump _____ gallons of 1262 from No. _____ storage tank to small Pyranol mix tank.

2. Add _____ pounds of Xylene to tank (_____ full drums). Thief each drum to be sure it is clear and free of water.

   BE SURE that Xylene pump is connected to line to small tank. Check out line before starting pump.

3. Agitate for one hour.

4. Take one-half gallon sample and send to Laboratory for 1262 - 10% Xylene. If out of spec, make adjustment.

   _____ Spec. _____

   Specific Gravity _____

5. If okay draw out in 60 lb. and/or 600 lb. Aroclor drums.

6. Stencil drums Aroclor 1262 - 10 PCT Xylol, Lot No._____.

NOTE: Be sure that the Pyranol Tank is empty before starting mix.

DSW 543098

WATER_PCB-SD0000051796

EMERGENCY PROCEDURE

DSW 543099

D. EMERGENCY PROCEDURE

This is the plan for departmental action in the event a hazardous situation or injuries warrant emergency action either in the Aroclor Department or within the Anniston Plant.

1. Hazardous situations which might occur are:

   a. Operational accidents or difficulties, such as explosions, fires, release of toxic fumes, etc.

   b. Forces of nature - hurricanes, tornadoes, floods, lightning, etc.

   c. Deliberate damage - malicious actions, sabotage, direct enemy action.

2. The primary considerations in the event of a disaster are:

   a. The care of injured individuals and evacuation of personnel to safe areas.

   b. Measures to prevent any, or further, property or equipment damage.

   c. Measures to provide accurate and thorough information so that other plant personnel and the community can be informed, if necessary.

   d. Prompt restoration of effected facilities and resumption of uninterrupted operations.

3. Responsibility:

   The areas of responsibility and overall department organization for disaster control are as follows:

   a. Chief Operator

      Responsible for continuing or closing down production facilities as conditions permit; for directing fire fighting and damage control activities in the department area; keeping department supervision fully informed of conditions within the department.

   b. Operators

      Responsible for evacuation of all personnel from danger area; for directing and assisting in first aid and rescue missions; reporting to and keeping Chief Operator informed of conditions within his area of responsibility.

      NOTE: All actions of the Fire Brigade are coordinated with the Chief Operator.

WATER_PCB-SD0000051798

4. Details of Plan:

a. In the event of an emergency, personnel must be accounted for. The first assembly area for the department is the open area south of the HB-40 Plant near the ladder rack; the second or alternate assembly area is east of the Aroclor-Biphenyl Building in the road near the shop entrance.

It is very important to know where people are in an emergency or before action is taken to correct an emergency. If the alternate area has to be used, take whatevery safety equipment you can, from the department, to the assembly area.

b. If assistance is needed, pertinent phone numbers of Plant personnel to be contacted are as follows:

P. K. Ward	236-5218
H. L. Williams	236-3835
W. B. Papageorge	237-7974
V. R. Haupt	237-7004
M. J. Williams	237-1952
C. K. Eastman	236-3025
L. C. Fuhrmeister	236-6773
T. D. Tucker	237-3927
Dr. J. C. Francis	237-5612 (Home)
Main Gate	236-2961 (308 or 317)

c. In the event of a plant disaster, the Plant Manager's office is the control center. The alternate control center is the Guard Room at the Service Building. The medical center is the Plant Dispensary. The alternate medical center is the Service Building.

d. If the emergency or disaster occurs before or after the day shift, or on a weekend, the department Chief Operator shall notify the guard on duty and the guard will be responsible for notifying plant supervision.

e. Immediately upon discovering a fire, or a current or imminent disaster condition, turn in an alarm. DIAL 211 and tell where and what the emergency is.

If the guard cannot be contacted, and the local Fire Department is needed, all them at 237-3541, giving them location, material burning, size of area involved, etc. Then call the department supervision.

NOTE: Chief Operator may designate this job to one of the Operators.

WATER_PCB-SD0000051799

5. Emergency Situations:

The following equipment emergencies are possible at the Aroclor Department. Be prepared to take action in the event they should occur. Prepare yourself by knowing what to do - get help beforehand on any part that is not understood.

Emergency	Action
a. Fire Handling Biphenyl	a. Turn in alarm - DIAL 211.
	b. Remove injured from fire area-take care of them.
	c. Proceed under Chief Operator to extinguish the fire:
	(1) Dry Powder extinguisher.
	(2) Fire truck, dry powder, and water.
	(3) Water.
	d. Pull power on all motors.
	e. Cut off gas to Aroclor and Biphenyl stills at main cut-off at northwest corner of blowing tank area.
	f. Shut down Department - Notify Chlorine Plant shutdown is necessary.
b. Chlorine Release Tank Car-Chlorine Plant	a. Obtain help and turn in alarm if necessary-notify Chief Operator.
	b. Obtain gas mask or Scott Air Pak.
	c. Shut off source of Chlorine.
	d. Notify Chlorine Plant if shutdown is necessary.
	e. Disconnect Cl_2 connection at car if necessary.
	f. If vaporizer is full of liquid chlorine, vent to the chlorine car, then shut off car.
	g. Notify Department Supervision as soon as possible.

DSW 543102

WATER_PCB-SD0000051800

Emergency	Action
c. HCl Release	a. Obtain help and turn in alarm if necessary - Notify Chief Operator.
	b. Obtain gas mask or Scott Air Pak.
	c. Shut off source of HCl gas.
	d. Notify Chlorine Plant if shutdown is necessary.
	e. Notify Department Supervision as soon as possible.
d. Fire or explosion at HB-40, Santowax, or Biphenyl Depts.	a. Turn in alarm, shut down Aroclor Department. Notify Chlorine Plant. Obtain gas mask, go to an assembly point, be prepared to assist in stopping the fire as directed by Chief Operator.
e. Emergency in the Plant.	a. Prepare to shut down on orders.
f. Equipment failure creating hazard	a. Notify Chief Operator or Department Supervision.
	b. Take appropriate action.
g. Injuries and Treatment	a. Obtain help.
	b. Prevent further injurier to person involved.
	c. Make comfortable.
	d. Know your first aid: (1) Mouth-to-mouth resuscitation. (2) How to use a resuscitator. (3) How to remove from electrical contact. (4) Action for a heat stroke. (5) Chest massage for heart failure. (6) Emergency action in case of burns. (7) Location of stretcher, blanket, oxygen. (8) Know equipment available from the dispensary.
	e. Contact Plant Physician as soon as possible if necessary. Make contact through Plant Guard or Dept. Supvr.

WATER_PCB-SD0000051801

EMERGENCY PROCEDURE
COLD WATER TREATMENT OF BURNS

APPENDIX A

(Thermal & Chemical)

Thermal Burn - The type of burn you would get by:

1. Direct exposure to flame.
2. Skin makes contact with hot surface.
3. Hot materials, such as molten Santowax, solidify when it touches the skin, thereby holding the heat in the skin.

Chemical Burn - The type of burn you would get by:

1. Contact with Muriatic or Sulfuric Acid.
2. Contact with Potassium or Sodium Hydroxide.
3. Contact with any acid or strong alkali material.

Treatment - Thermal Burns

If possible, submerge burn area in container of cold water (50°F.). The container may be a drum, water pail, wash basin - anything that will hold the water. Follow these steps:

1. Put water in container to desired depth.
2. Try to obtain a water temperature of 50°F. by adding ice cubes.
3. Submerge burn area below the surface of the water.
4. Transport injured person to the doctor, keeping burned surface submerged in water.

If burn is in area that cannot be submerged in water, it is a good practice to take the cleanest cloth or toweling that you can obtain, soak it in cold water (wringing out excess water), and place on the burned area. This would be an area such as the back, shoulders, or stomach. UNDER NO CIRCUMSTANCES SHOULD A PERSON SUFFERING FROM THERMAL BURNS BE PLACED UNDER RUNNING WATER. There is a danger of the small droplets of water striking the burned area, causing pain to such an extent as to result in shock.

DSW 543104

WATER_PCB-SD0000051802

Treatment - Chemical Burns

1. Place injured person under safety shower or some other method of washing with large amounts of water.

2. Remove contaminated clothing while under the shower.

3. If goggles are worn, keep in place until all the chemical has been washed from the body.

General

In our dispensary we have an ointment labeled Sulfathiazole. This material is used in the treatment of burns, both thermal and chemical. It allows an injury to heal from the inside out, which is usually the situation with a burn injury.

WATER_PCB-SD0000051803