



DOW CHEMICAL U.S.A.

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PLH
CL
4/22/81

LOUISIANA DIVISION
PLAQUEMINE, LOUISIANA 70764
804 389-8000

March 2, 1978

Poly B Personnel

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ENVIRONMENTAL HEALTH SURVEY REPORT - 1977

This survey contains the results of data obtained on chemicals, noise and dusts within Poly B.

I. NOISE

Two surveys were taken for noise exposure:

Area Noise Exposure

Using a noise level meter for obtaining noise level in plant areas.

Job Noise Exposure

Using an audio dosimeter to get a composite sample of noise on individual jobs.

A. Areas Exceeding 85 db (A)

1) Extrusion and Materials Handling:

All areas south and west of graphic panel room on the ground level and around dryers and separator screens on the dryer level.

2) Trains I and II Reaction Area:

Compressor deck, ground level by the surface condenser and glycol tank and around both air slides.

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A. Areas Exceeding 85 db (A) -- Continued

3) Trains III and IV Reaction Area:

Second deck by reactors, third deck by air slide blowers. Ground level from back roadway to steam still feed tanks; also ground floor around steam still phase-out drums.

4) Purification-Catalyst:

Ground level by catalyst feed pumps and ethylene beds. Hexane purification ground floor from roadway back to reflux drums and area around V-204.

Hearing Protection Must Be Worn In All Above AreasB. Job Noise Surveys

Each job was surveyed with an audio dosimeter to determine an eight hour T.W.A. (time weighted average) exposure. The standard is 85 db (A). For a job where no ear protection is worn the T.W.A. must be below 1.0 (100%).

<u>JOB</u>	<u>T.W.A.</u>	<u>PERCENT</u>
Plant Superintendent	0.085	8.5
Area Engineer	0.090	9.0
Lab Supervisor	0.375	37.5
Lab-Quality Control Specialist	0.065	6.5
Shipping Quality Control Specialist	0.445	44.5
Shift Supervisor	0.333	33.3
O.S. Board	0.010	1.0
S.O.T. Extrusion Inside	0.915	91.5
S.O.T. Extrusion Outside	0.850	85.0
S.O.T. Reaction Trains I & II	0.755	75.5
S.O.T. Reaction Trains III & IV	0.875	87.5
S.O.T. Purification	0.265	26.5
O.T. Extrusion	0.850	85.0
5th Shift	0.315	31.5
Lab Day	0.095	9.5
Lab Polymer	0.015	1.5
Lab Purification	0.395	39.5
Material Controller	0.015	1.5

II. CHEMICAL EXPOSURE

Nine chemicals were surveyed in Poly B during 1977. Five of these chemicals are classified as nuisance dusts covered in a later section. Other chemicals used in Poly B were not considered to have high enough exposure rates for monitoring. Each of the following chemicals are listed with their threshold limit values (TLV). Threshold limit value is the concentration, either in part per million (ppm) or milligrams per cubic meter:

<u>CHEMICAL</u>	<u>TLV</u>
Hexane	100 ppm
Vinyl Chloride	1 ppm
n-Propyl Alcohol (NPA)	200 ppm
Chloroform	25 ppm

It should be pointed out that chloroform and vinyl chloride are not used in Poly B operations (chloroform is used occasionally in the lab). However, their presence has been noted in monitoring and therefore will continue to be surveyed.

The following is a listing of job chemical exposure in the form of Equivalent Exposure Mixture (E_m). This E_m is the total of the exposure rates for all four chemicals monitored. Exposure rate is TWA/TLV and must be below 1.0 for each chemical or stress.

<u>JOB</u>	<u>E_m</u>
Plant Superintendent	0.31
Area Engineer	0.32
Lab Supervisor	0.41
Lab-Quality Control Specialist	0.84
Shipping Quality Control Specialist	0.04
Shift Supervisor	0.44
O.S. Board	0.31
S.O.T. Extrusion Inside	0.61
S.O.T. Extrusion Outside	0.28
S.O.T. Reaction Trains I and II	0.28
S.O.T. Reaction Trains III and IV	0.35
S.O.T. Purification	0.06
O.T. Extrusion	0.28
5th Shift	0.33
Lab Day	0.29
Lab Polymer	0.62
Lab Purification	0.66
Material Controller	1.20

The high E_m for the materials controller job was due to one high sample for vinyl chloride causing the total exposure to be above 1.0. Area sampling will be done in 1978 to determine where this exposure originated.

III. DUST EXPOSURE

The following chemicals are analyzed as total dust, TLV = 10 mg/m³:

Polyethylene
Calcium Stearate
Irganox 1010
Iono1
Dicalite 4106

Dust exposure rate for each job is as follows:

<u>JOB</u>	<u>T.W.A. (mg/m³)</u>	<u>E_r (Exposure Rate) Percentage</u>
Plant Superintendent	0.00	0.0
Area Engineer	0.31	3.1
Lab Supervisor	0.21	2.1
Lab Quality Control Specialist	0.10	1.0
Shipping Quality Control Specialist	0.44	4.4
Shift Supervisor	0.73	7.3
O.S. Board	0.00	0.0
S.O.T. Extrusion Inside	0.31	3.1
S.O.T. Extrusion Outside	1.60	16.0
S.O.T. Reaction Trains I and II	2.50	25.0
S.O.T. Reaction Trains III and IV	5.40	54.0
S.O.T. Purification	2.00	20.0
O.T. Extrusion	7.60	76.0
5th Shift	1.10	11.0
Lab Day	0.00	0.0
Lab Polymer	0.73	7.3
Lab Purification	5.20	52.0
Material Controller	1.10	11.0

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Certain jobs cause more dust exposure than others. These jobs require an operator to wear a disposable dust mask to reduce exposure:

- Mixing stearate Trains I and II
- Dumping the dump hopper
- Filling additive pots
- Mixing filter precoat
- Any other activity that creates large amounts of dust such as unplugging airslides or powder transfer lines.



P. L. Harich
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for Polyethylene B Plant

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