

E. I. DU PONT DE NEMOURS & COMPANY

WILMINGTON, DELAWARE 19886

ENGINEERING DEPARTMENT

May 2, 1968

The following procedure was issued on April 5, 1968, to Du Pont's Field Project Managers at its various Construction sites.

SAFETY - DUST CONTROL

In order to assure atmospheric conditions in insulation fabrication shops which will not contribute to the employees' health problems when working with asbestos fiber-containing materials, the Construction Division is initiating the following permanent air quality control program to be effective June 1, 1968.

Air Monitoring

Environmental air monitoring shall be conducted to provide quantitative data for site evaluation of dust control efficiency and assure conformance with established Threshold Limit Values (TLV).

1. The Threshold Limit Value for total dust count shall be 500,000 particles per cubic ft. of air.
2. Personnel monitoring will be conducted in the insulation shops on site locations. One employee will be requested to wear the air sampler one eight-hour day each month.
3. Trained site safety personnel shall be responsible for the control, operation and adjustment of the air sampling instrument, recording required technical data associated with the air sample, mailing of air sample to laboratory for analysis and compiling records of analysis reports.
4. When soliciting participation in the air monitoring program, craft supervision and Safety Engineer should anticipate who will be involved in work which will produce the greatest dust exposure for what day of that month.

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Air Monitoring (Continued):

5. The personnel air sampling instrument used shall be a Universal Industrial Equipment Co., Millipore filter Model 440B (qualified for explosion hazard areas) air sampler. The filter used shall be an .8 micron pore size, Millipore Cat. No. MAWG 037 AO, Type AA, in plastic holder. This equipment will be assigned to the sites where air monitoring is required by the Division Safety Office.
6. The filter in plastic holder, upon completion of air sampling, shall be mailed by the site Safety Engineer to Morton Corn, Ph.D., Graduate School of Public Health, University of Pittsburgh, Pittsburgh, Pennsylvania 15213, attention Felix Stein. A phase microscopy analysis of submitted sample will be made and a report submitted to the site and the Division Safety Office indicating:
(a) fibers below 5 micron length, (b) fibers above 5 micron length, and (c) total number of particles. Reports indicating total particle count to be approaching or above the TLV will require determining cause of condition and taking corrective action to reduce particle count. After improvement has been applied, a second eight-hour sample shall be conducted, analyzed and documented.

Atmospheric Dust Control

The application of the following recommendations should demonstrate conformance with the established dust TLV and provide effective dust emission control.

1. Materials containing Crocidolite asbestos fiber shall not be purchased or accepted for use. Materials containing Chrysotile and Amosite asbestos fibers are acceptable for use.
2. The pressure spray application of materials with any per cent of asbestos fiber content shall be eliminated.
3. All power tool and equipment operations shall be isolated from other shop facilities and fabricating operations.

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MAXIMUM ACCEPTABLE CONCENTRATIONS OF AIR CONTAMINANTS

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TABLE 2 - TOXIC DUSTS, FUMES AND MISTS (CONT'D)

Substance	Mg per Cu M	Substance	Mg per Cu M
2,4-D (2,4-dichlorophenoxyacetic acid)	10	Pentachloronaphthalene	0.5
DDT (2,2-bis [p-chlorophenyl]-1,1,1-trichloroethane)	1	Pentachlorophenol	0.5
Dieldrin (1,2,3,4,10,10-hexachloro-6,7-epoxy-1,4,4a,5,6,7,8,8a-octahydro-1,4,5,8-dimethanonaphthalene)	0.25	Phosphoric acid	1
Dinitrobenzene	1	Phosphorus (yellow)	0.1
Dinitrotoluene	1.5	Phosphorus pentachloride	1
Dinitro-o-cresol	0.2	Phosphorus pentasulfide	1
EPN (O-ethyl O-p-nitrophenyl thionobenzenephosphonate)	0.5	Picric acid	0.1
Forbam (ferric dimethyl dithiocarbamate)	15	Pyrethrum	2
Ferrovanadium dust	1	Rotenone	5
Fluoride	2.5	Selenium compounds (as Se)	0.1
Hydroquinone	2	Sodium fluoroacetate (1080)	0.1
Iron oxide fume	15	Sodium hydroxide	2
Lead	0.2	Strychnine	0.15
Lead arsenate	0.15	Sulfuric acid	1
Lindane (hexachlorocyclohexane, gamma isomer)	0.5	TEDP (tetraethyl dithionopyrophosphate)	0.2
Lithium hydride	0.025	TEPP (tetraethyl pyrophosphate)	0.05
Magnesium oxide fume	15	Tellurium	0.1
Malathion (O, O-dimethyl dithiophosphate of diethyl mercaptosuccinate)	15	Tetryl (2,4,6-trinitrophenylmethyl-nitramine)	1.5
Manganese	5	Thallium (soluble compounds)	0.1
Mercury	0.1	Thiram (tetramethyl thiuram disulfide)	5
Mercury (organic compounds)	0.01	Titanium dioxide	15
Methoxychlor (2,2-di-p-methoxyphenyl-1,1,1-trichloroethane)	15	Trichloronaphthalene	5
Molybdenum (soluble compounds)	5	Trinitrotoluene	1.5
Molybdenum (insoluble compounds)	15	Uranium (soluble compounds)	0.05
Nicotine	0.5	Uranium (insoluble compounds)	0.25
Parathion (O, O-diethyl- O-p-nitrophenyl thiophosphate)	0.1	Vanadium (V ₂ O ₅ dust)	0.5
		Vanadium (V ₂ O ₅ fume)	0.1
		Warfarin (3-[α-acetonylbenzyl]-4-hydroxycoumarin)	0.5
		Yttrium	5
		Zinc oxide fumes	15
		Zirconium compounds (as Zr)	5

TABLE 3 - MINERAL AND NONMETALLIC INORGANIC DUSTS

Substance	MPPCF	Substance	MPPCF
Silica		Portland cement	50
Quartz		Serpentine	20
High (above 50% free silica)	5	Talc	20
Medium (5 to 50% free silica)	20	Miscellaneous, including:	
Low (below 5% free silica)	50	Aluminum oxide	50
Crystalline (above 5%)	5	Calcite	50
Amorphous	20	Dolomite	50
Silicates		Limestone	50
Asbestos	5	Marble	50
Mica	20	Silicon carbide	50

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Atmospheric Dust Control (continued):

4. All power shop equipment shall, when operated, have installed exhaust ventilation of sufficient capacity to remove dust particles at point of origin. Exhausted dust particles shall be collected by an effective collector system which will not allow vent-off of dust particles to the atmosphere.
5. Present controlled shop cleanliness programs shall be expanded. A vacuum cleaner should be used in lieu of broom sweeping to remove dust particles from shop equipment work tables, ladders, floors, etc.
6. A controlled materials handling program should be adopted to eliminate the emission of dust; for example, when opening and removing materials from shipping cartons or in the handling and mixing of asbestos cements.

Respiratory Protection

Severe or isolated conditions may require that respiratory protective devices be used. Consideration should be made for adequate protection of people in adjacent areas to the work location producing this condition. A supplied air respirator or a filter respirator manufactured by Mine Safety Appliance Co., Pittsburgh, Pa., Model Dustfree 77 with filter number BM 21 B-9" should be used.

Your usual cooperation is anticipated in administering these dust controls.

CONSTRUCTION DIVISION

/S/ K. E. Keuper
Division Safety Superintendent

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December 20, 1971

✓ COMMENT NO. 4 - If this comes under OSHA, we will also have to cover in arrangements with insulating contractors.

X V. FLYNN, COMMENTS BY R. D. GOTWALS/W. S. PERSON - ORCHEM - CH. WKS.
COMMENT NO. 5 - Does the TLV (321) meet proposed Federal limits?

✓ COMMENT NO. 6 - Exposure in a shop operation is somewhat different from working on pipe lines in the field. Should we not mention the application of this Standard in field work as well?

✓ J. J. LAURINO, COMMENT BY J. J. LAURINO - PHOTO PRODUCTS - WILMINGTON
COMMENT NO. 7 - Recommend that this standard not be issued until the new format indicating the part covered by OSHA is in use.

X J. A. SIGMAN, COMMENTS BY G. B. KIRKPATRICK - TEX. FIB. - OLD HICKORY
COMMENT NO. 8 - 2.2b - "Opening boxes of new insulation" should read, "Opening boxes and stocking bins from new boxes of insulation.". Old Hickory has made repeated sampling tests of this bin stocking operation and found them over TLV limits. Our safety rules are being changed to include this operation where dust respirators will be worn.

X COMMENT NO. 9 - 3.1 - This may have to be rewritten to harmonize with comments above for 2.2b.

✓ COMMENT NO. 10 - 3.4.1 - This wetting down of insulation should carry a caution to refrain from wetting down hot lines where: a) Water could be flashed off to vapor and cause burns; b) Water could fracture pipe or weldments; c) Water could freeze out or slow down process flow in "on stream" lines.

X COMMENT NO. 11 - Dust respirators are to be worn anyway when removing insulation. (2.2c).

✓ COMMENT NO. 12 - 6.1.1 - Each area group of insulators at Old Hickory are asked to take at least one sample (not necessarily of 8 hrs. duration) on a different job each week. More samples are requested when there are indications of any change taking place or new types of materials are being tried. This type of sampling provides us with new data in some jobs and shows results of our efforts to improve dust control in other jobs.

X J. A. SIGMAN, COMMENTS BY P. E. M. SOONS - TEX. FIB. - DORDRECHT
COMMENT NO. 13 - Change point 3.1.4 as follows: "Glate coating on block insulation reduces asbestos as a potential dust source." Available or not available is of minor importance here.

X COMMENT NO. 14 - Add to 3.2.2: "Consideration also must be given to exposure of other personnel working in the area who are not directly involved". The same warning has been given in point 3.4.2. To our opinion, it applies here too.

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