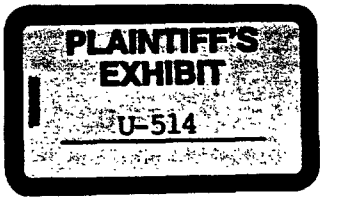


SURVEY

OF THE

PITTSBURGH - CORNING PLANT

AT

PORT ALLEGANY, PENNSYLVANIA

SEPTEMBER 16, 1971

Introductions & General Comments

The plant is located in a town of about 3,000 population, 25 miles from Bradford, Pennsylvania and has at present approximately 400 employees, 325 of which are hourly workers.

The plant occupies about 100 acres and consists of approximately 15 buildings with a combined floor space of 440,000 feet square.

With the exception of the polyurethane and unibestos finishing operations, the plant works three shifts.

The company has a full time Safety Director with no staff. There is no doctor or nurse, but a forty bed hospital is nearby in Port Allegany. There is a corporate medical consultant in Pittsburgh, Dr. Lee Grant, whose services are available. Chest x-rays (70mm) are taken yearly on all production personnel. Beginning this year 14" x 17" plates are to be taken biennially. At present the wearing of respirators is mandatory on a full time basis in the unibestos area. Safety equipment consists principally of gloves, hard hats and heat shields and respirators. Currently the management is working on the introduction of a company sponsored eye protection program, which would involve supplying personnel with plano as well as prescription safety glasses. Coveralls are issued to men working in scrap bins in the unibestos area and employees in this area are supplied with aprons. These clothes are not permitted to be taken home by the employee.

The plant has four major product lines:

| | | Number of Production Employees | |
|---|---|---|---|
| Plant 1 | Glass Blocks | 53 | (Maintanence and other |
| Plant 2 & 5 | Foam-Glass | 95 | service people make up |
| Plant 6 | Polyurethane Foam | 10 | rest of hourly rate |
| Plant 8 | Unibestos | 36 | population.) |

The glass feed stock, for plant (1) and (2) for the producing of glass block and foam glass, is made in Batch House (1) and (2). Major ingredients of mix for plant (1) are: Silica Sand in addition minor amounts of: $NaNO_3$

| | |
|---|---|
| Soda Ash | Fluorspar |
| Dolomite | Sodium Sulfate |
| Nepheline Syenite | Antimy Oxide |
| Rasorite | #1 Batch |

A list of raw materials used in all the plants is appended.

Description of Manufacturing Processes

To make glass, the ingredients tabulated above are fused together in a huge batch tank.

In plant (1) glass blocks are made by pressing a glob of molten glass. The pressing of the glass is done in a metal form where half of a block is produced at a time. Then the two halves are welded together in a subsequent operation to form the completed block which is coated on the edge with ground lime stone in a vinyl resin so as to enable mortar to hold to the glass. Blocks are decorated with spray type enamels in paint spray booths.

In plant (2) the foam glass operation starts out with the melting of the glass making ingredients in a batch tank. The molten glass is run from the batch tank like viscous cold molasses to form a tube of glass which is conveyed as a continuous tube all the way from the top of the building to the first floor. Here the tube is crushed and ground up to < 100 mesh powder, mixed with carbon, put in a stainless steel pan which has been dusted with an $Al_2O_3$ parting compound and baked in an oven for about an hour, (where it rises like bread) removed from mold and annealed for about 11 hours. At this point the foamglass blocks are faced, trimmed and in some instances ground to shape in hooded ventilated enclosures. Glass foam blocks are further fabricated to make foam glass boards. This is done by asphalt coating glass blocks and wrapping the coated sides with Kraft paper.

Plant 6 Polyurethane Foam

Polyurethane foam is manufactured on a semi continuous basis by mixing at 75°F two streams that contain ingredients consisting of TDI, a resin, a catalyst and a fluoro carbon. These chemicals begin to polymerize almost immediately to produce heat which vaporizes the fluoro carbons and the mass rises like a loaf of bread to produce a "bun" approximately 2 feet high by

five feet wide which after a curing period is cut to desired sizes by hot wires under a canopy hood. Some of the material is further fabricated but most is sold to the customer in huge chunks and in slices of various thickness.

Plant 8 Unibestos

Unibestos, an insulation material, is manufactured principally from amosite asbestos which arrives in Port Allegany via rail, packed in plastic lined burlap bags. Bags are opened in a hooded enclosure which covers the bin and feeding mechanism. In the processing, the asbestos is wetted with sodium silicate. Diatomaceous earth is then mixed with it and the material is rolled and dried. The dried rolls of insulation are trimmed and slit with a band saw and the finished roll may be fabricated further, or wrapped in Kraft paper and shipped. All scrap asbestos generated in the trimming process is reintroduced into the processes thru the feeder hoods.

General Impression of the Plant

Housekeeping: The housekeeping in general was good. The floors are cleaned with a sweeper that has a vacuum pick up which exhausts thru a bag filter which appeared to be doing a good job. Materials were piled so that passage ways were not obstructed. Some congestion was noted in the area where glass blocks were decorated but the management is aware of this and plans to improve this area.

Respirator Protection: Respiratory protection is probably necessary only in the Unibestos plant and here was the only place where respirators were used and here their use was mandatory for a full eight hour day ---- cloth dust masks were worn in and around areas where chemicals were fed into glass pots but these type masks offer no respiratory protection. The type respirator used in the Unibestos plant is made by Mine Safety Appliances and equipped with an ultra filter which is adequate for asbestos.

Potential Health Hazard: Based on observation only, there appear to be the following potential health hazards:

1. Free silica from handling sand and diatomaceous earth
2. Lead from spray painting blocks
3. TDI from the manufacturing of polyurethane foam
4. Amosite asbestos

The only real hazard that exists appears to be from exposure to air borne amosite asbestos in the unibestos operations and this opinion appears to be in agreement with that of the Commonwealth of Pennsylvania Department of Environmental Resources, Occupational Health Division, June 17, 1971. (copy of report appended)

Potential Safety Hazards: Though a complete safety survey was not made there were the following items worth mentioning:

1. There exists a hazard in cutting some of the salvage glass blocks with a band saw which could possibly result in the amputation of a finger or hand. Though there is no sure way to guard a band saw, some of the suggestions in the National Safety Council's book, "Accident Prevention Manual For Industrial Operation" Fifth Edition, Page 25 - 10 thru 13 would be applicable.
2. The chain drive on the polymerization step of the polyurethane "bun" production equipment should be guarded.
3. The compressed air outlets should all be removed from the plant so that the men can no longer use compressed air to clean clothes or equipment.

Ventilation

A. General Comments: Ventilation systems running to dust collectors are present in foam glass fabrication (plant #2) and foam glass finishing (plant #5) and also in the unibestos (plant #8).

In all there are four bag houses consisting of two 30,000 cfm units in the foam glass operations and two 15,000 cfm units in the unibestos plant.

No air is recycled and this is good from the view point of reintroduction of toxic material into the plant. However, since there is no makeup air being supplied, this could cause a deficiency of air in the winter time when the plant is buttoned up and this could interfere with the efficient functioning of the ventilation system during cold weather, since the blowers will be starved for air, and will be pulling cold air by infiltration from the out of doors or from other unheated areas, hence, creating excessive draftiness.

B. Ventilation on Unibestos Operations: There is ventilation of some sort on most unibestos operations. A sketch of the ventilation on the feed end as described by Mr. Lemen and Mr. Wallingford is appended.

The ventilation at feeder bin hoods was found to be more than adequate with face velocities in which one reading ran as low as 150 ft/min with all others from 200-275 ft/min. This indicated that the ventilation design was good and that the ventilation was working properly but it does not guarantee that the dust levels will meet current TLV's.

Openings on the large scrap bin showed a velocity of 200-275 ft/min which again indicates good ventilation.

On the finishing operation ventilation was sorely lacking. There was definite lack of hooding and ventilation associated with these operations. The band saw operation is not hooded. It does have two 6 inch ducts beside the band saw pulling with a face velocity of only 80 ft/min. Such low velocities do little or nothing to pick up asbestos dust or any other level of dust.

The drying hoods have at the canopy entrance 100 ft/min ventilation which appears to be low but could be adequate. The adequecy of the ventilation can only be determined by monitoring for air borne asbestos.

There is a practice of dropping the finished roll of unibestos from the table onto a "bun" of polyurethane foam and this produces dust (it produced more dust when it was dropped directly on the floor). Probably the roll should be lowered to the floor mechanically and in addition it should be set on a grating equipped with down draft ventilation for the purpose of preventing loosely held dust from becoming air borne.

## Summary and Conclusion

Though there are potential health hazards in the operations of the Pittsburgh-Corning, Port Allegany plant and these include silica, lead and TDI, the only serious health problem is apparently the handling and processing of amosite asbestos in the unibestos plants.

The company recognizes their problem but since they plan to be out of the amosite asbestos insulation business in mid 1972, they hesitate to spend near $100,000. for hooding and ventilation which their engineering study indicates is necessary to control this hazard. As a result they have applied to the Labor Department for a variance (copy attached).

Though the amosite feed end of the process has a well-designed ventilation system which pulls air through hood openings at recommended velocities, the finishing end where the unibestos rolls are trimmed and split with a band saw, has for all practical purposes no ventilation at all. The finishing end is operating as a non-controlled operation.

An heroic attempt has been made to protect personnel from air borne asbestos by making it mandatory to wear respirators in Plant 8 for as long as one is in the area. In most cases this amounts to a workman wearing a respirator for practically his whole 8-hour day, which is not a desirable practice and such practice may not be affording the respiratory protection that it is thought to, since respirators are easily defeated. For example, it was noticed in one instance where only one strap was used on the respirator, in another instance the respirator was repeatedly lifted off face so as to carry on a conversation. Most important of all, respirators are made so that theoretically they fit everyone, but they don't. Some people can not get a good seal with a respirator because their faces don't fit the normal pattern.

In addition to the above, respirators are fatiguing due to high breathing resistance and on an 8-hour day basis there is bound to be a tendency in an atmosphere lacking irritant gases as in Plant 8 to wear the respirator in such a way as to defeat it by allowing air to leak in around the face seals.

In summary, I believe that such use of respirators on an 8-hour basis is no guarantee that the desired respiratory protection is being achieved.

A greater confidence in guaranteeing respiratory protection could be achieved with supplied air respirators since the breathing resistance would be practically eliminated and where a positive air flow would prevail. However, no respirator is a substitute for local exhaust ventilation and the best guarantee of adequate respiratory protection would be to install adequate local exhaust ventilation and hooding on the finishing operations. Then TLV's should be approached more closely.

Another point that should be considered is that in working with asbestos there could be a potential outplant problem from the women laundering the men's work clothes at home and from asbestos dust taken home on the hair of the workmen. This can be prevented by company furnished work clothes and compulsory showering at the end of each shift. Clothing should be supplied from the skin out and must be laundered on the plant site or at a commercial laundry facility especially set up to wash work clothes contaminated with toxic chemicals.

Recommendations

In view of the fact that there is essentially no local exhaust ventilation or hooding on the finishing operation in the unibestos plant B where amosite asbestos is processed and since the use of 8-hour respiratory protection should not be tolerated over a prolonged period of time, it is recommended that the company be given some reasonable time to install ventilation and hooding on the unibestos operation or else the operation should be terminated.

If after the installation of ventilation and hooding, TLV's are not met, then further hygienic measures should be instigated so as to meet current TLV's.