PLAINTIFF'S EXHIBIT
tabbies
AL-1552

LEROY WAGNER
INDUSTRIAL HYGIENE DEPT.
POINT COMFORT OPERATIONS

MR. R. E. PODHORA
INDUSTRIAL HYGIENE DEPT.
POINT COMFORT OPERATIONS

MAY 19 1978

cc: Mr. R. M. Rose
Mr. T. B. Bonney - Pittsburgh

1978 May 16

RE: ASBESTOS DUST TEST

| Date | Bldg. | Time | Activity | Wearing Respirator | Concentration Fibers/ML |
|---|---|---|---|---|---|
| 78-04-15 | 13E | 16 Min. | Removing old marinite from casting mold with hand chisel | Yes | .01 |
| 78-04-15 | 13E | 15 Min. | | Yes | .05 |
| 78-04-15 | 13E | 20 Min. | Cutting and installing marinite on casting mold | Yes | .03 |
| 78-04-15 | 13E | 22 Min. | | Yes | .02 |

During removal, a portable vacuum cleaner was in use. For cutting the built-in Pangborn dust collector was used. All samples were taken on the workers.

Leroy Wagner
LEROY WAGNER

LW:gm

COPY



ALCOA

6/4 - 6/5/79

INTRODUCTION

Operations at Massena Works include a smelting plant with one P-225 potline and two P-75 potlines with associated pot repair and maintenance activities. A carbon plant manufacturers anodes for both types of potlines. The fabricating division has facilities for producing wire, rod and bar of various sizes, extrusions and bare conductor cable. The covered conductor department has not been operating for some time.

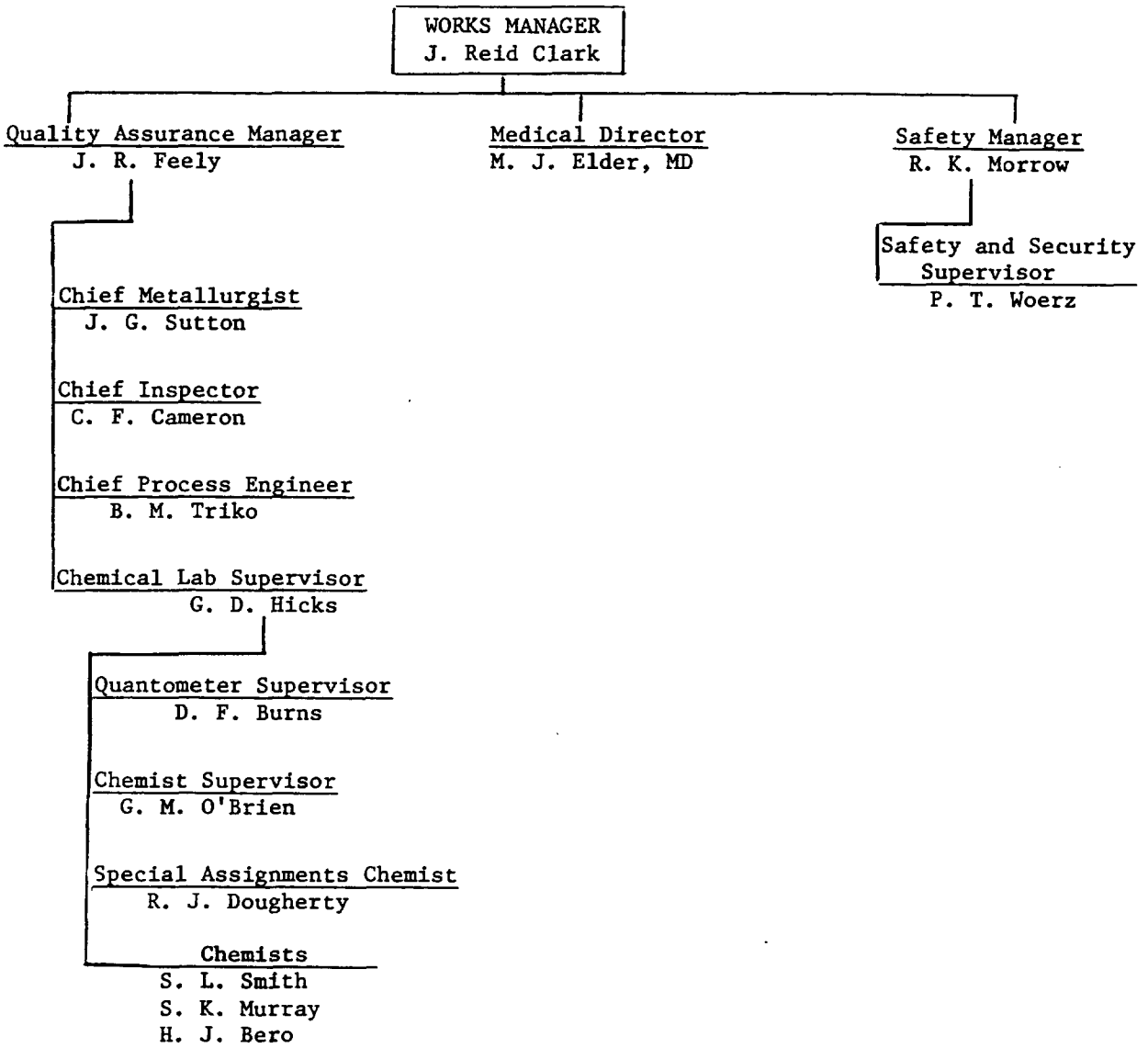
A consolidation plan in the Fabricating Division is underway with completion date scheduled for 1979. This program will provide a better flow of materials through the fabrication plant with most of the operations under one roof. Massena Operations has about 2300 employees of which about 1500 are hourly. The hourly workers are represented by the AWIU.

Mr. Gerald D. Hicks, the laboratory supervisor, is the Works Industrial Hygienist, reporting to Mr. J. R. Feeley, Quality Assurance Manager, who in turn reports to the Operations Manager, Mr. J. R. Clark. Gerald Hicks, a chemist with many years of experience has aquired additional training to enable him to perform industrial hygiene activities. He has completed NIOSH 550 course, Industrial Hygiene Measurements and had on-the-job training at Warrick prior to his transfer to Massena.

Mr. R. K. Morrow, Safety Manager of Massena Works has been assigned the overall responsibilities of industrial hygiene. He is assisted in his safety duties by Mr. P. T. Woerz who is also supervisor of security. Mr. Woerz spends a large portion of his time in the plant on inspections. Paul, formerly safety director for construction at Massena, has a degree in Environmental Safety and Safety Management and additional training completing NIOSH 510 course, Recognition of Occupational Health Hazards.

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The reporting relationships existing at Massena Works are shown:



PRESENT INDUSTRIAL HYGIENE CAPACITIES

Area supervisors, safety people and laboratory personnel whose duties take them in the plant alert Gerry Hicks to a possible health problem. Gerry or one of his staff investigates and perform the sampling and analysis followed by a report of the findings to the department head with necessary recommendations to alleviate the problem.

Gerry's staff has been trained by him in sampling and analysis and in making noise measurements. There is on-site capability to perform gravimetric dust determinations, analysis for fluorides with Orion equipment and for metals using atomic absorption. The hydrocarbon samples for PPOM, asbestos samples for counting and respirable dust samples for percent silica are sent to EHL for analysis. Industrial Hygiene equipment maintenance and calibration are performed by three chemists and a technician of the laboratory staff. Although many of the exposures of concern have been checked from time to time there has not been a procedure for routinely monitoring exposures except for urinary fluorides in the potroom area.

The types and quantity of industrial hygiene sampling instrumentation available for assessing employee exposures are listed below:

1. Sampling Pumps

| Make/Model | Quantity |
|---|---|
| MSA Model G | 3 |
| SKC Model 222-3S1 | 1 |
| Pulse Pump, Environmental Measurements, Inc. | 1 |

2. Respirable Dust Samplers

| Type | Quantity |
|---|---|
| MSA 10mm nylon | 3 |

3. Impingers and Bubblers

| Type | Quantity |
|---|---|
| Standard Impingers | 30 |
| Standard Impingers as Bubblers | 10 |
| Midget Impingers | 9 |
| Fritted Glass Bubblers | 6 |

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4. Noise Measurement Equipment

| Type | Quantity |
|---|---|
| GR 1933 Octave Band Analyzer | 1 |
| GR 1562-A Calibrator | 1 |
| GR 1558-BP Octave Band Analyzer | 1 |
| *DuPont D-100 Dosimeter | 2 (90 dBA cutoff) |

*In process of trading the two D-100's for five D-376 with 85-90 dBA cutoff.

5. Detector Tubes and Pumps

Drager and MSA pumps with an assortment of detector tubes.

6. Direct Reading Instruments

| Type | Model | Contaminant |
|---|---|---|
| Ecolyzer | 2100 | CO, 0-100 ppm |
| Ecolyzer | 2900 | CO, 0-250 ppm<br>0-2000 ppm |
| MSA Combustible Gas | 40 | Combustibles |
| MSA Combustible Gas/$O_2$ | 250 | Combustibles and $O_2$ |
| Edmont Oxygen | | % $O_2$ |
| MSA Nitrogen Dioxide Unit (Old - not used) | | |

7. High Volume Samplers

Gelman Model 1600-3-1

8. Ventilation and Heat Stress Equipment

Rotating Vane Anemometer
Anemotherm
Smoke tubes
Various pitot tubes and manometers
1 equipped heat stress stand
Bendix Psychron

9. Analytical Balance

Mettler H-51, 5 place

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PRESENT INDUSTRIAL HYGIENE ACTIVITIES

Industrial hygiene activities are presently being conducted at Massena Works on as "as needed" basis. Sampling is performed, typically at the request of plant supervisors, by either the safety group during inspections or by chemical lab personnel in the course of their regular plant duties.

After the industrial hygiene responsibility was assigned to Ron Morrow, a meeting was held with Paul Woerz and Gerald Hicks to formulate plans for a comprehensive industrial hygiene program. From this meeting it was agreed that Gerald Hicks would make assignment changes in the lab providing more time for his group to become involved in hygiene activites. The materials listed in the 1958 IH Manual will be updated, a project now underway through the aid of a summer employee. All purchase department requisitions will continue to be reviewed by Gerald Hicks for hazardous materials, providing information of where materials are to be used and the need for surveillance.

Recently the Operations' Industrial Hygiene Committee was reactivated with excellent representation from areas throughout the plant. The members of the Committee ~~affiliation~~ and their Committee duties are shown in the appended memorandum, R. K. Morrow, dated 1978 May 04.

AUDIOMETRY

The Medical Department is equipped with an audiometer and audiometric booth. The four nurses who perform audiometric tests have been certified within the last four years at Environmental Hearing and Vision Consultants, Syracuse, NY, with one recertified by HCNC recently. Audiometric testing is performed as part of pre-employement physicals and on all production employees at the time of their periodic physicals (Approximately 3 years). Salaried personnel over 40 years of age receive annual physicals including audiometric tests. HCNC made their initial visit to Massena on June 5-6 1978 and has submitted recommendations on the hearing conservation program.

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CHLORINATED HYDROCARBONS

Vapor degreasers using 1,1,1-trichloroethane (methyl chloroform) and trichloroethylene as solvents are found throughout the plant. Testing on the degreasers has been done in the past using detector tubes, however, because of the recent attention given to the potential health hazards associated with the use of chlorinated hydrocarbons, it is important that sufficient personal sampling be conducted at the vapor degreasers to document the time-weighted-average (TWA) exposures of the operators. I recommend that sampling be conducted twice per year, once in the summer when the buildings are open and in the winter with the buildings closed.

NOISE

Noise exposures are one of the most frequently encountered problems throughout the works, especially in the fabricating areas. A plant-wide noise survey has not been performed recently because of the lack of available personnel, however a number of noisy areas have been surveyed in order to furnish information to engineering for noise control. After completion of an engineering project, noise measurements are made to determine the effectiveness of the noise controls. Plans for an annual noise survey of the plant are being developed and will be followed by dosimeter studies in borderline noise areas. The possibility of using summer help to conduct the survey is under consideration.

ASBESTOS

Potential exposures to asbestos fibers exist at the following locations in the Ingot plant: (1) the mold assembly room, (2) the casting and soaking pits, and (3) the ingot lathing area. Marinite headers are pre-cut by an outside concern, minimizing dust exposure; however, dust is produced during hand finishing and assembly operations in the mold assembly room. Exposure to asbestos fibers

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exists during the hand-removal of asbestos paper from ingot bottoms prior to lathing. Also, any excess or embedded asbestos not removed by hand is dislodged during the lathing operation.

Personal samples of employee exposure taken in 1978 May of asbestos fibers in the marinite finishing room and at the lathing area showed levels below the allowed 2 fibers/cc air. The asbestos standard requires personal monitoring every six months to document exposures in areas where asbestos is used. In addition, annual medical examinations are required for all employees in occupations exposed to airborne concentrations of asbestos fibers regardless of the concentration. The standard also details methods of clean-up and disposal of asbestos materials.

EVALUATION OF PRESENT INDUSTRIAL HYGIENE PROGRAM

The nucleus of an industrial hygiene program is present at Massena Operations. The updating of the list of process materials and the continued review of all purchase requisitions will provide Massena with a good handle on the locations of potential sources of employee exposures. In addition, the plant-wide representation serving on the Industrial Hygiene Committee should furnish valuable input in setting up a periodic surviellance program. Using the above resources, inspection stations and sampling locations can be assigned in areas and departments for periodic surveillance. While making surveys, various industrial hygiene parameters should be noted, such as general working conditions; use of personal protective devices; efficiency of ventilation systems and adequacy of plant housekeeping. Throughout the survey grab sampling or spot checks may be conducted, noting those areas that should be evaluated in greater detail through personal sampling techniques.

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The laboratory has instrumentation available to perform almost all analyses required by industrial hygiene. An increase in the number of low flow rate and MSA Model G pumps would allow the samplers to use their time more efficiently by sampling more employees at one time.

The main shortcoming in the present program is the lack of periodic surveillance of the work areas and documentation of full shift personal exposures. Because of the size of the plant more personnel are required to allow inspections of the various departments and follow-up sampling. In addition to the 30-40% time spent by Gerald Hicks and his staff, there are sufficient problems to require a full-time professional industrial hygienist to perform the duties necessary for an adequate industrial hygiene program. As comprehensive OSHA standards replace the threshold limit values more personal monitoring for occupational exposures will be required at specific time intervals.

In addition to periodic surveillance, the inevitable complaints relative to potential exposures will need to be investigated. The laboratory has responded to such requests promptly, in many cases interrupting their regular duties in order to perform the sampling and evaluation. However, with a systematic approach to industrial hygiene throughout the plant, these complaints should be reduced.

From observations made during the walk-through survey the attached listing outlines potential occupational exposures that require periodic evaluation. It should be noted that this list may contain omissions and include items that should be deleted; personnel who are familiar with plant operations at Massena Works should refine this list after a more extensive survey is conducted.

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SUMMARY OF RECOMMENDATIONS

1. Updating and revising the list of materials currently used and reviewing of purchase requisitions for hazardous materials should continue.
2. Establish inspection stations and sampling locations in all areas and/or departments for purposes of routine surveillance.
3. Perform monthly walk-through surveys noting areas where personal samples should be taken and analyzed for occupational exposures.
4. Conduct annual plant-wide noise level surveys and document employee exposure. Summer help or co-op students should be considered for this type of work.
5. Employment of a full-time professional industrial hygienist should be considered and along with the continued support from the laboratory and safety group a comprehensive industrial hygiene program can be provided.
6. Review the qualifications of personnel performing industrial hygiene sampling and analysis activities. Additional training and education in various industrial hygiene diciplines should be encouraged, e.g., NIOSH courses such as #550 Industrial Hygiene Measurements and #593 Occupational Respiratory Protection.
7. Continue efforts regarding the substitution of other materials for asbestos throughout Massena Works. However, it should be emphasized that periodic surveillance and sampling be conducted on all employees exposed to asbestos to assure employee health protection. The importance of proper housekeeping when using asbestos products cannot be stressed enough. The OSHA Standard CFR 1910.1001 concerning asbestos should be reviewed by plant supervisors using asbestos or asbestos products.

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8. Establish a routine procedure for periodic assessment of the effectiveness of ventilation systems in the plant.
9. Review Engineering Safety and Health Standard 18.1, Respiratory Protection. Implement sections of this corporate standard that apply to the Massena Works.
10. Purchase additional low flow rate and MSA Model G pumps to increase efficiency of sampling procedures.

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MASSENA WORKS

Walk-Through Industrial Hygiene Survey

1978 June 7-9

Areas and operations with potential exposure that require evaluation:

SMELTING

Carbon Plant

Unloading and transfer of coke and liquid pitch - dust and coal tar pitch volatiles.

Mixing - coal tar pitch volatiles, dust

Press and Vibrators - Coal tar pitch volatiles

Crusher - Noise, dust

Ball Mill - Noise, dust

Furnace - Coal tar pitch volatiles, $SO_2$, dust

Rodding - 1,1,1-Trichloroethane, noise, dust, ventilation at furnaces

Maintenance personnel should be monitored for the contaminants in area where they work.

Potrooms

Filling buckets with fluoride and alumina - fluoride, total dust

Proper shield placement on pots

$SO_2$

Pot Repair

Pot digging - fluoride dust, nusiance dust, $NH_3$, phosphine(?), noise

Pot straightening - fluoride dust, noise

Pot welding - fluoride, local exhaust ventilation

Pot relining - coal tar pitch volatiles from hot seam mix

Bath Crusher

Fluoride, CO from trucks, housekeeping

Butt Cleaning

Fluoride, noise, $SO_2$ (?)

Machine Shop

Welding fumes, check local exhaust ventilation

1,1,1-Trichloroethane degreaser, asbestos

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Garage

Carbon monoxide (in winter?), mineral spirits

Battery charging area- general ventilation

Aluminum Shipping

Carbon monoxide from trucks loading rail cars

## INGOT PLANT

Furnace Area - Casting Pits

No chlorine or sulfur dioxide noted, check during winter months

Asbestos in pits; eating areas in pits— poor housekeeping

Emergency respirators- MSA type N gas mask with acid gas canister in each casting pit. Need to be cleaned, uses reviewed

Review procedures for ingot plant personnel action during catastrophic chlorine spills.

Application of Tarset in casting pits for solvents

Skim Reclamation

Skim cooled in room; transferred to railroad car, dust

Mold Assembly Room

Hand finishing marinite molds, asbestos.

1,1,1-Trichloroethane degreaser

Extrusion Area

Glastic block fumes- secure material data sheet from manufacturer

Asbestos, poor housekeeping in area

Oil mist (?)

Chlorine Vaporizer Area

Chlorine gas

Post the emergency procedures for chlorine spills

Check supplied air respirators periodically

Emergency teams retrained semi-annually

Review Engineering Standard 18.12, Safety and Health in Chlorine Operations

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## FABRICATION AREAS

### Machine Shop

Trichloroethylene degreaser

Local exhaust ventilation at welding stations should be used

Small lead pot--check Pb concentration and ventilation of hood

### Motor Repair

Trichloroethylene degreaser

Insulating paint booth and curing ovens

Paint

### Central Garage

Carbon monoxide (in winter)

Cleaning solvent (?)

### Accessory Finish

Occasional use of asbestos paper

Core making sand--silica

Byproducts of core making materials

Hand molding--dust

Automatic molding machine--noise, dust

Core knockout--silica, noise

Welding fumes--$O_3$ (continue attempts to reduce levels)

Cadmium-zinc brazing--not used for 2 years, check fumes if used in future

### Merchant Mill

Wire redraw area--noise

Inert gas furnaces--carbon monoxide

Spooling aluminum welding wire--1,1,1-trichloroethane, isopropyl alcohol

Caustic dip operations--caustic fumes, oxides of nitrogen, check ventilation periodically

### Building 140

Caustic dip operations--caustic fumes, oxides of nitrogen, check ventilation periodically

Continuous mill--oil mist

### Cable Mill

Noise

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