FROM

TO MEMORANDUM (DRAFT)

1979 May 21

RE: MASSENA OPERATIONS AUDIT

INTRODUCTION

Massena Operations includes both smelting and fabricating facilities.

The smelting operation consists of:

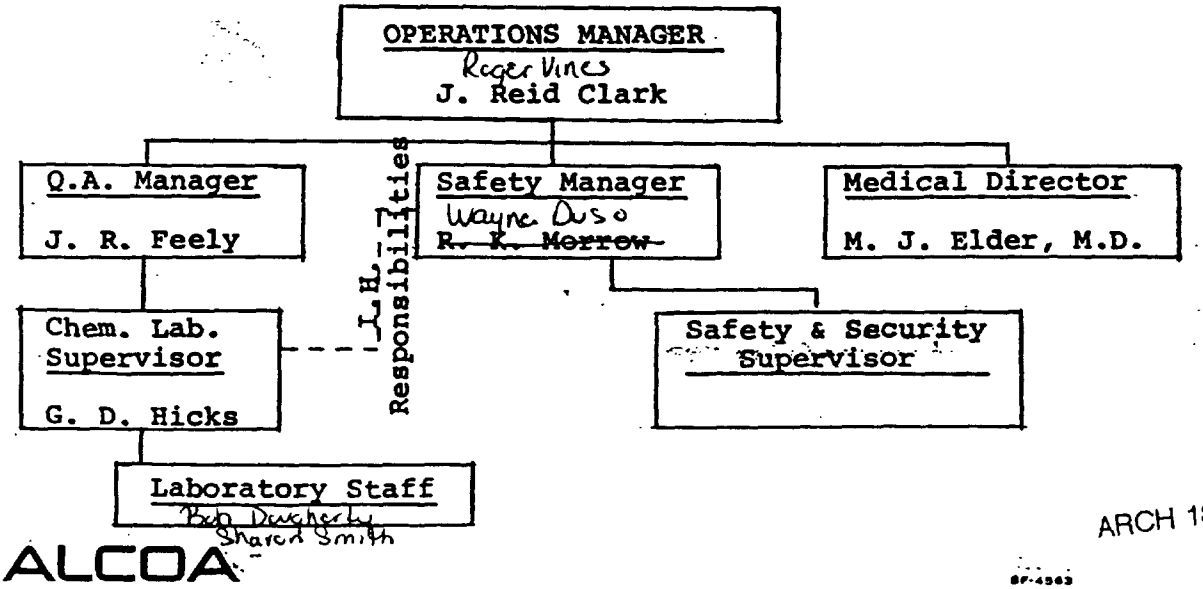
1) Carbon plant
2) One P-225 potline
3) Two P-75 potlines, with associated pot repairs and maintenance activities
4) Ingot plant

The fabricating division has facilities for producing:

1) Wire, rod and bar of various sizes
2) Extrusions
3) Bare conductor cable

Massena Operations has about 2300 employees, of which about 1500 are hourly. The hourly workers are represented by the Aluminum Workers International Union.

Mr. R. K. Morrow, Safety Manager of Massena Operations, has the overall responsibility for Industrial Hygiene. Mr. Gerald D. Hicks, the Laboratory Supervisor, is the Works Industrial Hygienist. He is a chemist with many years of experience, and has acquired additional training to enable him to perform Industrial Hygiene activities. He has completed the NIOSH 550 Course, Industrial Hygiene Measurements, and has had on-the-job training at Warrick prior to his transfer to Massena. Those having Industrial Hygiene and related responsibilities are shown on the abbreviated Organization Chart shown below:



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ARCH 18620

PRESENT INDUSTRIAL HYGIENE CAPABILITIES

The Laboratory has on-site capabilities to perform a variety of analyses, including gravimetric dust determinations, fluoride analyses, and metal determinations. Samples for the analysis of Coal Tar Pitch Volatiles, asbestos, and silica are sent to EHL. Industrial Hygiene equipment maintenance, and calibration are performed by three chemists and a technician of the Laboratory staff. The Laboratory staff has received on-the-job training in Industrial Hygiene sampling and analysis, and in making noise measurements.

adequate?

A list of Industrial Hygiene sampling instrumentation available for assessing employee exposures is shown on Attachment (I)

adequate? recommendations with site No.!

PRESENT INDUSTRIAL HYGIENE ACTIVITIES

Industrial Hygiene activities are presently being conducted at Massena Operations on an "as needed" basis; typically, at the request of Plant Supervisors or by Safety or Laboratory personnel as a result of potential hazards being observed in production areas. 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.

After the Industrial Hygiene responsibility was assigned to Ron Morrow, a meeting was held to formulate plans for a comprehensive Industrial Hygiene program. From this meeting, it was agreed that Gerald Hicks would make assignment changes in the Laboratory to provide more time for his group to become involved in hygiene activities. All Purchasing 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.

available?

A tentative schedule listing the potential problem areas in the plant has been prepared and is to be used as a guide for Industrial Hygiene sampling. There are also plans to update the materials listed in the 1958 Industrial Hygiene Manual, and to include in it safe handling procedures and other necessary information. In addition, there are plans for setting up a record retention system which will interface with the local Medical Department.

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

and M. R. Morrow & Chem

EVALUATION OF PRESENT INDUSTRIAL HYGIENE PROGRAM

The rudiments of an Industrial Hygiene program are present at Massena Operations. The preparation of a list of potential problem areas, updating of the list of process materials, and the continued review of all Purchase Requisitions will provide Massena with a reasonably good handle on the location of potential sources of employee exposures.

The main shortcomings in the present program are the lack of adequate training for field personnel, and the lack of periodic surveillance of the work areas and documentation of full-shift personal exposures. Additional man-hours are required to allow inspections of the various departments and follow-up sampling. Some of the areas in need of attention are shown in Attachment II, with a comprehensive listing in Attachment III. When one considers the 30-40% time spent by Gerald Hicks and his staff, and the appreciable amount of needed work not now being done, there is justification for a full-time professional Industrial Hygienist being employed at Massena.

SUMMARY OF RECOMMENDATIONS

- Review the qualifications of personnel performing Industrial Hygiene sampling and analysis activities.
  It is understood that Sue Murray, Lab Chemist, is scheduled to attend an AIHA Training Course in Industrial Hygiene. Training and education in various Industrial Hygiene disciplines should be encouraged for those engaged in hygiene activities.

- Employment of a full-time professional Industrial Hygienist should be considered.
  Along with the continued support from the Laboratory and Safety group, a comprehensive Industrial Hygiene program can thus be provided.

- The Industrial Hygiene Committee should schedule ~~monthly~~ meetings.
  These meetings can be used as a very effective tool in accomplishing the goals of an overall Industrial Hygiene program.

- Monthly walk-through surveys should be performed, noting areas where personal samples should be taken and analyzed for occupational exposures.

- Every effort should be made to conduct the sampling needs indicated in Massena's prepared Sampling Guide.

- It is recommended that two additional low flow rate pumps and two additional MSA Model G Pumps be purchased to increase the efficiency of sampling procedures.

SUMMARY OF RECOMMENDATIONS (Cont.)

- A routine procedure for periodic assessment of the effectiveness of ventilation systems in the plant should be established.

/eds
Attachments

ATTACHMENT I

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	
MSA 10mm nylon	3

3. Impingers and Bubblers

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

4. Noise Measurement Equipment

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

*In process of trading the two D-100s 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 0-2500 ppm
MSA Combustible Gas	40	Combustibles
MSA Combustible Gas $0/_2$	250	Combustibles and O_2
Edmont Oxygen	--	% O_2
MSA Nitrogen Dioxide Unit (Old - Not used)		

ATTACHMENT I

Quantity

7. High Volume Samplers

   Gelman Model 1600-3-1

8. Ventilation and Heat Stress Equipment

   Rotating Vane Anemometer
   Anemothern
   Smoke Tubes
   Various Pitot Tubes and Manometers
   1 Equipped Heat Stress Stand
   Bendix Psychron

9. Analytical Balance

   Mettler H-51, 5 place

# # # #

ATTACHMENT II

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, New York, with one recertified by HCNC recently. Audiometric testing is performed as part of pre-employment 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 1978 June 05-06 and has submitted recommendations on the hearing conservation program. What did Massena do with recommendations?

NOISE

Noise exposures are one of the most frequently encountered problems throughout the works, especially in the fabricating areas. A plantwide noise survey was performed by short-term help. Following the survey, discussions with Engineering people were conducted regarding each of the problem areas to develop solutions. outcome? 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. any deficiencies?

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

ATTACHMENT II

CHLORINATED HYDROCARBONS (Cont.)

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. It is recommended that sampling be conducted twice per year: once in the summer when the buildings are open; and in the winter with the buildings closed.

ASBESTOS

Potential exposures to asbestos fibers exist at the following locations in the Ingot Plant:

1) Mold assembly room
2) Casting and soaking pits
3) 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 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.

There are also numerous uses in the potrooms. Pot repair personnel should be checked for asbestos exposure. Those employees involved in future demolition of the N-40 potline should also be checked for asbestos exposure.

is what they're doing adequate?

ATTACHMENT II

ASBESTOS (Cont.)

Personal samples of employee exposures 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, but above the 0.1 fibers/cc action level set by OSHA. The Asbestos Standard requires personal monitoring every 6 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.

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ATTACHMENT III

MASSENA WORKS
WALK-THROUGH INDUSTRIAL HYGIENE SURVEY
1978 JUNE 07-09

Areas and operations with potential exposure that require evaluation are as follows:

AREAS & OPERATIONS	POTENTIAL EXPOSURES
SMELTING	
Carbon Plant	
- Unloading and transfer of coke and liquid pitch	Dust; 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 Repairs	
- Pot digging	Fluoride dust; Nuisance 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; Potential asbestos exposure in demolition of N-40 potline; Silica in pot relining from insulation.

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Areas and operations with potential exposure that require evaluation are as follows:

AREAS & OPERATIONS	POTENTIAL EXPOSURES
SMELTING (Cont.)	
Bath Crusher	
- Trucks; Housekeeping	Fluoride; CO
Butt Cleaning	Fluoride; Noise
Machine Shop	Welding fumes; Check local exhaust ventilation; 1,1,1-Trichloroethane degreaser; asbestos.
Garage	Carbon monoxide (in winter?); Mineral spirits
- Battery charging area	General ventilation
Aluminum Shipping	
- Trucks loading rail cars	Carbon monoxide
* * *	
INGOT PLANT	
Furnace Area - Casting Pits	No chlorine or sulfur dioxide noted; Check during winter months.
- Pits	Asbestos
- Eating areas in pits	Poor housekeeping
- Emergency respirators-MSA Type N gas masks with acid gas canisters in each casting pit	Need to be cleaned; Uses need to be reviewed; correct labeling required, i.e., "Escape Mask Only".
- Catastrophic chlorine spills	Review procedures for Ingot Plant personnel action during such situations.
- Casting pits	Application of Tarset for solvents

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Areas and operations with potential exposure that require evaluation are as follows:

AREAS & OPERATIONS	POTENTIAL EXPOSURES
INGOT PLANT (Cont.)	
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); Oil mist (?); Poor housekeeping in area; Asbestos
Chlorine Vaporizer Area	Chlorine gas; Chlorine spills -- Post emergency procedures; Air respirators -- Check supplies periodically; Emergency teams retrained semi-annually; Review Engineering Standard 18.12, Safety & Health in Chlorine Operations
* *	*
FABRICATION AREAS	
Machine Shop	Trichloroethylene degreaser
- Welding stations	Local exhaust ventilation should be used
- Small lead pot	Check Pb concentration and ventilation of hood
Motor Repair	Trichloroethylene degreaser; Insulating paint booth & curing ovens; Paint

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AREAS & OPERATIONS	POTENTIAL EXPOSURES
FABRICATION AREAS (Cont.)	
Central Garage	Carbon monoxide (in winter); Cleaning solvent (?)
Accessory Finish	Occasional use of asbestos paper
- Core making sand	Silica; by-products 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

ARCH 18632

# # # #

FROM: R. K. MORROW

TO: MEMORANDUM

1978 May 04

Industrial Hygiene because it is concerned with employee safety is the responsibiity of the Safety Department at Massena Operations. The hygiene effort here has historically been an intermittent one with area surveys being done and action being taken on an emergency or call-in basis. In this age of OSHA regulations for industrial exposure requiring surveys, record keeping and medical examinations we must have an organized,ongoing hygiene program.

With this in mind I have decided to reactivate the Operations' Industrial Hygiene Committee which will be charged with the following:

1. Become familiar with and stay abreast of existing and proposed Industrial Hygiene Regulations.

2. Identify present and future problems.

3. Provide feedback to operating and staff personnel on problems and regulations.

4. Make recommendations to management for necessary action and follow-up to completion.

5. Assist in education of personnel on good work habits and correct use of protective equipment.

The members of the Committee are as follows:

Safety Manager	R. K. Morrow	-	Chairman
Chief Met.	J. G. Sutton	-	Secretary
Tech. Coord.-Potrooms	N. Wells		
Chem. Lab. Supv.-I.H.	G. D. Hicks		
Prod. Eng.-Ingot	W. T. Burt		
Safety & Security Supv.	~~P. T. Myers~~ T. A. Reine		
Chief Mech. Engr.-Fab.	R. K. Brown		
Plant Physician	Dr. M. J. Elder		
Env. Control Supt.	P. F. Woodward		

The first meeting will be held on Wednesday, May 10 at 3:00 P.M. in the Main Office Conference Room. Committee members, please send me before that time any thoughts on Industrial Hygiene or problems you have recognized in the plant.

R. K. MORROW

RKM:bl

Cc: Managers
Members of Committee

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Persons doing noise survey:

1) Must have proper training, must know where to take measurements (although this has been identified via plant map to some extent)
2) Still need someone to evaluate the results

Girl who did the recent survey had very little previous training.

ATTACHMENT II
(Contd. - Page 2)

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