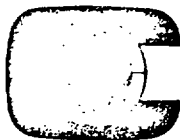


YOUR WORLD OF PROTECTION



TEXAS EMPLOYERS' INSURANCE ASSOCIATION

POST OFFICE BOX 2759 | DALLAS, TEXAS 75221

2 B Bonney
JED

PLAINTIFF'S
EXHIBIT
AL-1741

June 16, 1976

Mr. E. Brooks Parker
Works Environmental Engineer
Aluminum Company of America
P. O. Box 472
Rockdale, Texas 76567

Dear Brooks:

The attached outline covers the main topics suggested for the 2 hour session. For portions of the discussions, a script has been drafted so that the final presentation could be "text" type material.

The material being sent may not yet be in the form we need before making a presentation to plant management. This is part of what probably should be discussed if not by telephone, then by another meeting. Specifically I am not quite sure when to include the specific departmental exposures discussion, and still maintain a continuity of purpose in presenting the basic industrial hygiene concepts.

I don't recall the exact date that you and Nelson will be out, but I will call during the week of June 21 in order to coordinate our efforts.

Sincerely,

Charles W. Reed

Charles W. Reed, P.E.
Director of Industrial Hygiene

/jh

cc: H. N. Mueller
Clarence Kunze, Austin Engineering

ARD 001886

I. General

A. Definitions

1. Industrial Hygiene
2. Environmental Health
3. Occupational Health

B. Relationship of Safety and Industrial Hygiene

C. Emphasis of Recognition, Evaluation, Control

II. Recognition of Health Hazards

A. Source of Exposures

1. Knowledge of plant or departmental process
2. Knowledge of materials used
3. Knowledge of how materials (raw, products, by-products, etc.) are used - (transfer conveyors, grinding, mixing, heating)
4. Determine points or location most likely to cause emission of contaminants

B. Types of Environmental Exposures - Different characteristics assist in describing potential hazards.

1. Chemicals - general effects

a. Liquids

- i. Acids
- ii. Solvents
- iii. Caustics
- iv. Oils

b. Mists

- i. Suspension in air of very small liquid droplets usually generated by condensation from gaseous to liquid state or by mechanical action such as breaking up a liquid by splashing, foaming or atomizing

e.g. Oil mist, acid mist from electroplating
- ii. Hazard increase because of small particle more suitable for inhalation
- iii. Skin contact increase over vapors

c. Dusts

- i. Solid particles generated by handling, crushing, grinding, etc.

e.g. silica, asbestos, cotton - pneumoconiosis dusts;
lead, manganese, cadmium - systemic poisons;
Portland cement, gypsum, limestone - nuisance dusts
- ii. Toxic properties of individual materials
- iii. Effect of particle size

d. Fumes

- i. Volatilized solids which cool from gaseous state to condense as fine solid particles

e.g. molten metals; "metal fume fever"
- ii. Toxic properties of fumes generally
- iii. Toxic effect of specific

e. Vapors

- i. Gaseous form of a substance that is usually a liquid or solid

e.g. Solvent vapors

f. Gases

- i. Formless state of matter, not normally a liquid or solid, which will diffuse and occupy all available space

e.g. combustion gases - carbon monoxide, nitrogen dioxide, sulfur dioxide, hydrogen sulfide, ozone.

2. Physical Factors

a. Noise - Discussion on differences between

- i. Gradual loss of hearing
- ii. Traumatic
- iii. Disease caused

b. Heat

- i. Environmental heat
- ii. Contact with hot materials

3. Ergonomic

a. People-machine orientation

III. Health Hazards-Evaluation Factors

A. Severity

1. Concentration
2. Toxicity
3. Duration

B. Modes of entry - How is body attacked?

1. Skin

- a. Skin damage directly
- b. Absorption through skin

2. Ingestion

- a. Damage through swallowing
- b. Inhalation by swallowing

3. Inhalation

- a. Natural defenses of respiratory system
- b. Effect of particle size, physical characteristics
- c. General effect of chemicals such as solvents - including simple symptoms

C. Units - Threshold Limit Values

Threshold limit values are time-weighted average atmospheric concentrations of substances to which nearly all workers may be repeatedly exposed, day after day, without significant discomfort or impairment of health.

1. Analysis of definition

- a. "...time-weighted average..." - based on an eight hour day, forty hour work week; excursion values
- b. "...atmospheric concentrations..." - based solely on inhalation
- c. "...nearly all workers..." - individual susceptibility; health workers
- d. "...repeatedly exposed..." - chronic exposure, eight hour day, etc.
- e. "...without significant discomfort or impairment of health..." - basis for establishing a TLV for a specific substance

2. Criteria for establishing TLV's

- a. Animal experiments
- b. Human experiments
- c. Industrial experience

3. Expression of concentration

- a. Milligrams per cubic meter of air (mg/m^3) - concentration by weight
- b. Parts of contaminant per million parts of air (ppm) - concentration by volume
- c. Miscellaneous
 - i. M.P.P.C.F. - million particles per cubic foot of air
 - ii. % - percent - conversion of ppm to %

$$\underline{1\% = 10,000 \text{ ppm}}$$

4. Examination of the TLV list

IV. DEPARTMENTAL EXPOSURES

	<u>Carbon Plant</u>	<u>Rod Room</u>	<u>Potrooms</u>	<u>Ingot</u>	<u>Atomizer</u>
1. Carbon and coke dust	X				
2. Fluorides	X		X		
3. Pitch fumes	X		X		
4. Alumina dust	X		X		
5. Oil Mist	X				
6. Noise	X	X	X	X	X
7. Heat	X	X	X	X	X
8. Vehicle Exhaust	X	X	X	X	
9. Metal fumes		X			
10. Metal - Iron		X			
11. Metal - Silicon		X			
12. Metal - Manganese		X			
13. Radiation Electric Arc		X			
14. Copper		X			
15. Carbon monoxide			X		
16. Methyl Naphthaline			X		
17. Asbestos			X		
18. Magnetic Fields			X		
19. Chlorine				X	
20. Oxygen				X	
21. Slag or Skim dust				X	X
22. Castor oil				X	
23. HCl (acid)				X	
24. Aluminum					X
25. Inert gas					X

CARBON PLANT

1. Carbon and coke dust
2. Fluorides
3. Pitch fumes
4. Alumina dust
5. Oil mist
6. Noise
7. Heat
8. Vehicle exhaust fumes

RODDING ROOM

1. Noise
2. Metal fumes from Lectromelt cast iron melting operation
3. Metals include iron, silicon, and manganese
4. Radiation from Lectromelt furnace (electric arc melting)
5. Heat
6. Copper dust from abrasive blasting of anode rods
7. Vehicle exhaust fumes

POTROOMS

1. Fluorides
2. Carbon monoxide
3. Alumina dust
4. Noise
5. Heat
6. Methyl naphthalene-solvent used in potlining seam mix and in cleaning of bus joints
7. Pitch fumes--potlining operation
8. Asbestos--when dumping spent potlining containing asbestos insulation
9. Magnetic field?
10. Vehicle exhaust fumes

Ingot Plant and Properzi Rod Mill Area

1. Noise
2. Chlorine
3. Oxygene
4. Furnace skim dust--contains oxides, chlorides, and nitrides of metals involved. These metals include Al, Si, Fe, Cu, Mn, Mg, Zn, Ti, B, Pe, Cr, and possibly Co.
5. Castor oil
6. Hydrochloric acid and muriatic acid
7. Vehicle exhaust fumes
8. Heat?

ATOMIZER

1. Noise
2. Aluminum powder
3. Inert gas from inert gas generators
4. Furnace skim dust
5. Heat?

MECHANICAL AND ELECTRICAL MAINTENANCE

- | | |
|----------------------------|--|
| 1. Carbon and coke dust | 20. Oxygen |
| 2. Fluorides | 21. Slag or skim dust |
| 3. Pitch fumes | 22. Castor oil |
| 4. Alumina dust | 23. HCl (acid) |
| 5. Oil mist | 24. Aluminum |
| 6. Noise | 25. Inert gas |
| 7. Heat | 26. Silica dust from sandblasting |
| 8. Vehicle exhaust | 27. Paint fumes |
| 9. Metals - Iron | 28. Trichloroethylene from degreaser |
| 10. Metals - Silicon | 29. Solvents used in machinery cleaning |
| 11. Metals - Manganese | 30. Welding fumes |
| 12. Metal fumes | 31. Asbestos--when working on automotive equipment brakes and older steam lines in plant |
| 13. Radiation electric arc | 32. Hydrogen from battery charging |
| 14. Copper | 33. Sulfuric acid--automotive batteries |
| 15. Carbon Monoxide | 34. Wood dust--carpenter shop |
| 16. Methyl naphthaline | 35. Pesticides and herbicides |
| 17. Asbestos | 36. Hydraulic fluid and all types of oil and grease |
| 18. Magnetic field | |
| 19. Chlorine | |