NATIONAL OCCUPATIONAL HEALTH SURVEY OF MINING

APLITE REPORT

MARCH 4, 1987

COMMENTS SHOULD BE DIRECTED TO

PROJECT OFFICER
NATIONAL OCCUPATIONAL HEALTH SURVEY OF MINING
NIOSH
DIVISION OF RESPIRATORY DISEASE STUDIES
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SUBJECT

INTRODUCTION

This is one of a series of reports on the National Occupational Health Survey of Mining (NOHSM), which is being carried out by the National Institute for Occupational Safety and Health (NIOSH). This particular report provides NOHSM data for the aplite commodity, which was surveyed during May, 1984. One mine was surveyed in the aplite commodity. The only other active aplite operation listed by MSHA when the sample was drawn was closed during the survey segment. The NOHSM began in May, 1984, as an effort by NIOSH to obtain representative data related to occupational health from the mining industry. The data collected were similar to the information previously obtained in non-mining studies. Specifically, NOHSM data include:

a. Occupational health program and policy information;
b. An inventory of all health-related substances found on mine property; and
c. A series of worksite observations which detail potential exposure to chemical and physical agents.

These data are being collected by surveyors who travel to each mine site. The survey sites have been chosen so as to provide a statistically valid representation of each commodity. With this representative sample, NIOSH can project survey data to the entire mining industry.

The NOHSM is being carried out primarily as a service to the Mine Safety and Health Administration (MSHA), and secondarily as a source of information for NIOSH investigators and other interested parties. MSHA plans to use the data for three purposes:

1. To set regulatory priorities and write improved health standards;
2. To improve compliance with existing standards; and
3. To identify and determine research needs and priorities.

This transfer of information to MSHA is mandated by Section 201 of the 1977 Federal Mine Safety and Health Amendments Act.

This report identifies potential exposures and provides the associated numbers of workers, the occupations of those workers, and the locations on the mine property where the potential exposures were observed. This information is categorized into seven tables: four concerning chemical agents; one concerning musculoskeletal overload conditions; one physical exposure conditions; and one welding processes. Estimated annual usage information is provided for chemical substances, both generic and tradenames.

For the aplite commodity, Table 1 contains 1 chemical which was found on mine property that is regulated by MSHA. No information was obtained which would normally be displayed in Table 2 (chemicals found on mine property that have a NIOSH recommended exposure limit but are not regulated by MSHA). Three chemicals were found which have no NIOSH recommendation or MSHA exposure limit (Table 3). Table 4 lists 19 tradename products to which workers in the aplite commodity were found to be potentially exposed. Table 5 describes potential exposures to ionizing radiation, noise, and process-related temperature, the only observed physical agents. Table 6 lists potential exposures to muskuloskeletal conditions involving only the finger/hand. Table 7 indicates the two welding processes, arc welding and oxyfuel gas cutting, which were observed to be used in the aplite commodity.

It is extremely important that the limitations of the reported data be recognized. The data do not in any way document exposures or exposure levels. The data only indicate potential exposures. The term "potential exposure" means the agent was observed to be present at one or more worksites in such a way that there was a possibility of workers being exposed to the agent.

Likewise, the usage data presented in some of the tables are only a guide to the projected magnitude of usage and should not be taken as precise information. The usage data are based on estimates provided by mine management. It is expected that these estimates have widely varying accuracy. Furthermore, all the estimates were rounded to the nearest whole number, with all quantities between 0 and 1 being reported as 1. Thus, extremely small usage levels may actually be lower than estimated. With this possible exception, NIOSH believes the relative magnitude to be appropriately represented.

Another limitation to be observed is the terminology associated with the commodity, occupation, and location. These terms were adapted directly from MSHA information and applied by NIOSH. NIOSH recognizes that other parties may prefer other commodity, occupation, or location terminology. The MSHA terms were used because of MSHA's close interest in the data.

A separate report will be prepared for each commodity surveyed as a part of the NOHSM. During each year of the NOHSM, approximately 150 mining operations are surveyed as the sample from a number of selected commodities. A different set of commodities is surveyed during each year.

NIOSH plans for use of these data in the future include:

a. Encourage MSHA use of the data, as outlined above;
b. Determine the ranges of exposure to various agents, as required by Section 201 of the 1977 Federal Mine Safety and Health Amendments Act;
c. Assist in setting priorities for mine-related occupational health research; and
d. Respond to questions from other parties regarding occupational health aspects of the mining industry.

Information beyond that presented in this report has been collected during the NOHSM. All of the information not protected by trade secret claims is available to the public upon detailed written request. Other categories of available information include:

a. Management policies related to occupational health;
b. Duration of potential exposures;
c. Operations associated with potential exposures;
d. Controls employed with potential exposures; and
e. Results of bulk dust analyses.

Interested parties should direct their requests to:

Project Officer
National Occupational Health Survey of Mining
NIOSH
Division of Respiratory Disease Studies
944 Chestnut Ridge Road, Room 140
Morgantown, WV 26505

TABLE DEFINITIONS

AGENT NAME	(1) # WORKERS POTENTIALLY EXPOSED (OBSERVED)	(2) # WORKERS POTENTIALLY EXPOSED (PREDICTED)	(3) % WORKERS POTENTIALLY (PREDICTED)	(4) PREDICTED ANNUAL USAGE	(5) OCCUPATIONS	(6) LOCATIONS

Column (1) represents the total number of workers in occupations within this commodity in which a potential exposure to an agent was observed or identified through questioning of mine management or workers. This number only includes workers from the NOHSM sample sites. A "potential exposure" means the agent was observed to be present at the worksite in such a way that there was a possibility of workers being exposed to the agent. The potential exposures do not imply any exposure level, nor do they imply the absence or presence of controls.

Column (2) represents the number of workers within this commodity predicted to be potentially exposed to each agent. This number reflects a projection to this entire commodity, based on data obtained at NOHSM sample sites.

Column (3) represents the percentage of workers within this commodity predicted to be potentially exposed to each agent. Column (3) is obtained by dividing column (2) by the projected total population of workers in the commodity.

Column (4) represents the number of gallons (GAL) or the number of pounds (LBS) of each chemical that NIOSH has estimated to be used per year. This number is obtained from projections based on estimates of usage provided by mine management, and should only be used in determining the order of magnitude of usage. It should not be used as a precise figure. This number reflects a projection to this entire commodity, based on data obtained at NOHSM sample sites. In some cases, where usage data was unavailable, a "*" appears in this column.

Column (5) contains the occupations observed to have a potential for exposure to this agent. In each occupation, the percentage of workers with a potential for exposure to the agent is given in parentheses. This number only includes data obtained at NOHSM sample sites.

Column (6) contains the locations where workers were observed to have a potential for exposure to this agent at the NOHSM sample sites. The percentage of workers in each listed location with a potential exposure to the agent is given in parentheses. This number only includes data obtained at NOHSM sample sites.

 NOTE: THIS TABLE DOES NOT CONTAIN DATA CLAIMED TO BE TRADE SECRET.

MSHA REGULATED CHEMICALS FOUND ON MINE PROPERTY

COMMODITY NAME: APLITE

CHEMICAL NAME	(1) #WORKERS POTENTIALLY EXPOSED (OBSERVED)	(2) #WORKERS POTENTIALLY EXPOSED (PREDICTED)	(3) %WORKERS POTENTIALLY EXPOSED (PREDICTED)	(4) PREDICTED ANNUAL USAGE
ACETYLENE	5	5	16	18,750 GALS.

(5) OCCUPATIONS	(6) LOCATIONS
604 MECHANIC (100%)	005 SURFACE SHOP (100%)

 NOTE: THIS TABLE DOES NOT CONTAIN DATA CLAIMED TO BE TRADE SECRET.

CHEMICALS FOUND ON MINE PROPERTY THAT HAVE A NIOSH RECOMMENDED EXPOSURE LIMIT BUT ARE NOT REGULATED BY MSHA

COMMODITY NAME: APLITE

CHEMICAL NAME	(1) #WORKERS POTENTIALLY EXPOSED (OBSERVED)	(2) #WORKERS POTENTIALLY EXPOSED (PREDICTED)	(3) %WORKERS POTENTIALLY EXPOSED (PREDICTED)	(4) PREDICTED ANNUAL USAGE

NO DATA FOR THIS TABLE IN THIS COMMODITY

 NOTE: THIS TABLE DOES NOT CONTAIN DATA CLAIMED TO BE TRADE SECRET.

CHEMICALS FOUND ON MINE PROPERTY THAT HAVE NO NIOSH RECOMMENDATION OR MSHA EXPOSURE LIMIT

COMMODITY NAME: APLITE

CHEMICAL NAME	(1) #WORKERS POTENTIALLY EXPOSED (OBSERVED)	(2) #WORKERS POTENTIALLY EXPOSED (PREDICTED)	(3) %WORKERS POTENTIALLY EXPOSED (PREDICTED)	(4) PREDICTED ANNUAL USAGE
DIESEL FUEL NO.2	10	10	31	530,000 GALS.

(5) OCCUPATIONS		(6) LOCATIONS
375 ROAD GRADER OPTR (100%)	376 TRUCK DRIVER (100%)	009 SURFACE MISC (50%)
379 DRYER OPTR; KILN OPTR (100%)	728 COMPLETE LOAD/HAUL/DUMP CYCLE (100%)	010 SURFACE MILL (80%)
734 ROTARY DRILL OPTR (100%)	778 BACKHOE OPTR (100%)	004 SURFACE MINE (100%)

CHEMICAL NAME	(1) #WORKERS POTENTIALLY EXPOSED (OBSERVED)	(2) #WORKERS POTENTIALLY EXPOSED (PREDICTED)	(3) %WORKERS POTENTIALLY EXPOSED (PREDICTED)	(4) PREDICTED ANNUAL USAGE
TETRABROMOETHANE	1	1	3	4 GALS.

(5) OCCUPATIONS	(6) LOCATIONS
514 LABORATORY TECHNICIAN (100%)	009 SURFACE MISC (17%)

CHEMICAL NAME	(1) #WORKERS POTENTIALLY EXPOSED (OBSERVED)	(2) #WORKERS POTENTIALLY EXPOSED (PREDICTED)	(3) %WORKERS POTENTIALLY EXPOSED (PREDICTED)	(4) PREDICTED ANNUAL USAGE
GASOLINE, UNLEADED	5	5	16	6,500 GALS.

(5) OCCUPATIONS	(6) LOCATIONS
604 MECHANIC (100%)	005 SURFACE SHOP (100%)

 NOTE: THIS TABLE DOES NOT CONTAIN DATA CLAIMED TO BE TRADE SECRET.

TRADENAME PRODUCTS FOUND ON MINE PROPERTY

COMMODITY NAME: APLITE

MANUFACTURE'S NAME AND TRADENAME PRODUCTS	(1) #WORKERS POTENTIALLY EXPOSED (OBSERVED)	(2) #WORKERS POTENTIALLY EXPOSED (PREDICTED)	(3) %WORKERS POTENTIALLY EXPOSED (PREDICTED)	(4) PREDICTED ANNUAL USAGE
ORYDENE OIL CO.				
LITHIUM E.P. NO.1 LUBRICANT	2	2	6	1,200 LBS.

(5) OCCUPATIONS	(6) LOCATIONS
375 ROAD GRADER OPTR (100%)	009 SURFACE MISC (17%)
734 ROTARY DRILL OPTR (100%)	004 SURFACE MINE (33%)

10W OIL	1	1	3	600 GALS.

(5) OCCUPATIONS	(6) LOCATIONS
728 COMPLETE LOAD/HAUL/DUMP CYCLE (100%)	004 SURFACE MINE (33%)

30W OIL	5	5	16	600 GALS.

(5) OCCUPATIONS	(6) LOCATIONS
375 ROAD GRADER OPTR (100%)	009 SURFACE MISC (50%)
376 TRUCK DRIVER (100%)	
728 COMPLETE LOAD/HAUL/DUMP CYCLE (100%)	004 SURFACE MINE (67%)
778 BACKHOE OPTR (100%)	

E.I. DUPONT DE NEMOURS & CO.				
DUPOND MS-75 DELAY CAPS	1	1	3	8 LBS.

(5) OCCUPATIONS	(6) LOCATIONS
734 ROTARY DRILL OPTR (100%)	004 SURFACE MINE (33%)

 NOTE: THIS TABLE DOES NOT CONTAIN DATA CLAIMED TO BE TRADE SECRET.

TRADENAME PRODUCTS FOUND ON MINE PROPERTY

COMMODITY NAME: APLITE

MANUFACTURE'S NAME AND TRADENAME PRODUCTS	(1) #WORKERS POTENTIALLY EXPOSED (OBSERVED)	(2) #WORKERS POTENTIALLY EXPOSED (PREDICTED)	(3) %WORKERS POTENTIALLY EXPOSED (PREDICTED)	(4) PREDICTED ANNUAL USAGE
DUPONT MS-100 DELAY CAPS	1	1	3	8 LBS.

(5) OCCUPATIONS	(6) LOCATIONS
734 ROTARY DRILL OPTR (100%)	004 SURFACE MINE (33%)

DUPONT MS-125 DELAY CAPS	1	1	3	8 LBS.

(5) OCCUPATIONS	(6) LOCATIONS
734 ROTARY DRILL OPTR (100%)	004 SURFACE MINE (33%)

DUPONT MS-150 DELAY CAPS	1	1	3	8 LBS.

(5) OCCUPATIONS	(6) LOCATIONS
734 ROTARY DRILL OPTR (100%)	004 SURFACE MINE (33%)

DUPONT MS-175 DELAY CAPS	1	1	3	8 LBS.

(5) OCCUPATIONS	(6) LOCATIONS
734 ROTARY DRILL OPTR (100%)	004 SURFACE MINE (33%)

DUPONT MS-25 DELAY CAP	1	1	3	8 LBS.

(5) OCCUPATIONS	(6) LOCATIONS
734 ROTARY DRILL OPTR (100%)	004 SURFACE MINE (33%)

 NOTE: THIS TABLE DOES NOT CONTAIN DATA CLAIMED TO BE TRADE SECRET.

TRADENAME PRODUCTS FOUND ON MINE PROPERTY

COMMODITY NAME: APLITE

MANUFACTURE'S NAME AND TRADENAME PRODUCTS	(1) #WORKERS POTENTIALLY EXPOSED (OBSERVED)	(2) #WORKERS POTENTIALLY EXPOSED (PREDICTED)	(3) %WORKERS POTENTIALLY EXPOSED (PREDICTED)	(4) PREDICTED ANNUAL USAGE
DUPONT MS-50 DELAY CAPS	1	1	3	8 LBS.
(5) OCCUPATIONS: 734 ROTARY DRILL OPTR (100%)				(6) LOCATIONS: 004 SURFACE MINE (33%)
TOVEX WATER GEL EXPLOSIVE A	1	1	3	36,000 LBS.
(5) OCCUPATIONS: 734 ROTARY DRILL OPTR (100%)				(6) LOCATIONS: 004 SURFACE MINE (33%)
ISHER SCIENTIFIC COMPANY				
ACETONE A-18	1	1	3	10 GALS.
(5) OCCUPATIONS: 514 LABORATORY TECHNICIAN (100%)				(6) LOCATIONS: 009 SURFACE MISC (17%)
AMMONIUM HYDROXIDE	1	1	3	13 GALS.
(5) OCCUPATIONS: 514 LABORATORY TECHNICIAN (100%)				(6) LOCATIONS: 009 SURFACE MISC (17%)
HYDROCHLORIC ACID	1	1	3	12 GALS.
(5) OCCUPATIONS: 514 LABORATORY TECHNICIAN (100%)				(6) LOCATIONS: 009 SURFACE MISC (17%)

 NOTE: THIS TABLE DOES NOT CONTAIN DATA CLAIMED TO BE TRADE SECRET.

TRADENAME PRODUCTS FOUND ON MINE PROPERTY

COMMODITY NAME: APLITE

MANUFACTURE'S NAME AND TRADENAME PRODUCTS	(1) #WORKERS POTENTIALLY EXPOSED (OBSERVED)	(2) #WORKERS POTENTIALLY EXPOSED (PREDICTED)	(3) %WORKERS POTENTIALLY EXPOSED (PREDICTED)	(4) PREDICTED ANNUAL USAGE
HYDROFLUORIC ACID	1	1	3	5 GALS.

(5) OCCUPATIONS	(6) LOCATIONS
514 LABORATORY TECHNICIAN (100%)	009 SURFACE MISC (17%)

MALCO CHEMICAL CO.

FILTERAID-401	2	2	6	3,300 LBS.

(5) OCCUPATIONS	(6) LOCATIONS
616 LABORER; BULLGANG (100%)	009 SURFACE MISC (33%)

THE LINCOLN ELECTRIC CO.

ABW	5	5	16	20 LBS.

(5) OCCUPATIONS	(6) LOCATIONS
604 MECHANIC (100%)	005 SURFACE SHOP (100%)

11018-M 1/8	5	5	16	20 LBS.

(5) OCCUPATIONS	(6) LOCATIONS
604 MECHANIC (100%)	005 SURFACE SHOP (100%)

 NOTE: THIS TABLE DOES NOT CONTAIN DATA CLAIMED TO BE TRADE SECRET.

TRADENAME PRODUCTS FOUND ON MINE PROPERTY

COMMODITY NAME: APLITE

MANUFACTURE'S NAME AND TRADENAME PRODUCTS	(1) #WORKERS POTENTIALLY EXPOSED (OBSERVED)	(2) #WORKERS POTENTIALLY EXPOSED (PREDICTED)	(3) %WORKERS POTENTIALLY EXPOSED (PREDICTED)	(4) PREDICTED ANNUAL USAGE
7014 701 1/8	5	5	16	20 LBS.

(5) OCCUPATIONS	(6) LOCATIONS
604 MECHANIC (100%)	005 SURFACE SHOP (100%)

 NOTE: THIS TABLE DOES NOT CONTAIN DATA CLAIMED TO BE TRADE SECRET.

PHYSICAL AGENT CONDITIONS IDENTIFIED ON MINE PROPERTY

COMMODITY NAME: APLITE

PHYSICAL AGENT CONDITION	(1) #WORKERS POTENTIALLY EXPOSED (OBSERVED)	(2) #WORKERS POTENTIALLY EXPOSED (PREDICTED)	(3) %WORKERS POTENTIALLY EXPOSED (PREDICTED)
IONIZING RADIATION	1	1	3

(5) OCCUPATIONS	(6) LOCATIONS
514 LABORATORY TECHNICIAN (100%)	009 SURFACE MISC (17%)

PHYSICAL AGENT CONDITION	(1) #WORKERS POTENTIALLY EXPOSED (OBSERVED)	(2) #WORKERS POTENTIALLY EXPOSED (PREDICTED)	(3) %WORKERS POTENTIALLY EXPOSED (PREDICTED)
NOISE	10	10	31

(5) OCCUPATIONS	(6) LOCATIONS
376 TRUCK DRIVER (100%)	009 SURFACE MISC (67%)
616 LABORER; BULLGANG (100%)	010 SURFACE MILL (100%)
778 BACKHOE OPTR (100%)	004 SURFACE MINE (33%)
379 DRYER OPTR; KILN OPTR (100%)	
649 ADMN, SUPERVISORY, MGT PERSNL (100%)	

PHYSICAL AGENT CONDITION	(1) #WORKERS POTENTIALLY EXPOSED (OBSERVED)	(2) #WORKERS POTENTIALLY EXPOSED (PREDICTED)	(3) %WORKERS POTENTIALLY EXPOSED (PREDICTED)
TEMPERATURE(PROCESS RELATED)	5	5	16

(5) OCCUPATIONS	(6) LOCATIONS
379 DRYER OPTR; KILN OPTR (100%)	010 SURFACE MILL (100%)
649 ADMN, SUPERVISORY, MGT PERSNL (100%)	

 NOTE: THIS TABLE DOES NOT CONTAIN DATA CLAIMED TO BE TRADE SECRET.

MUSCULOSKELETAL OVERLOAD CONDITIONS IDENTIFIED ON MINE PROPERTY

COMMODITY NAME: APLITE

MUSCULOSKELETAL CONDITION	(1) #WORKERS POTENTIALLY EXPOSED (OBSERVED)	(2) #WORKERS POTENTIALLY EXPOSED (PREDICTED)	(3) %WORKERS POTENTIALLY EXPOSED (PREDICTED)
FINGER AND HANDS	2	2	6

(5) OCCUPATIONS		(6) LOCATIONS
375 ROAD GRADER OPERATOR (100%)	778 BACKHOE OPERATOR (100%)	009 SURFACE MISC (17%) 004 SURFACE MINE (33%)

 NOTE: THIS TABLE DOES NOT CONTAIN DATA CLAIMED TO BE TRADE SECRET.

WELDING POTENTIAL EXPOSURE

COMMODITY NAME: APLITE

WELDING PROCESS	(1) #WORKERS POTENTIALLY EXPOSED (OBSERVED)	(2) #WORKERS POTENTIALLY EXPOSED (PREDICTED)	(3) %WORKERS POTENTIALLY EXPOSED (PREDICTED)
ARC WELDING	5	5	16

(5) OCCUPATIONS	(6) LOCATIONS
604 MECHANIC (100%)	005 SURFACE SHOP (100%)

OXYFUEL GAS CUTTING	5	5	16

(5) OCCUPATIONS	(6) LOCATIONS
604 MECHANIC (100%)	005 SURFACE SHOP (100%)

50272-101

REPORT DOCUMENTATION PAGE	1. REPORT NO.	2.	3 PB90-180183
4. Title and Subtitle National Occupational Health Survey of Mining. Aplite Report			5. Report Date 87/03/04 6.
7. Author(s) Anonymous			8. Performing Organization Rept. No.
9. Performing Organization Name and Address National Occupational Health Survey of Mining, NIOSH, Morgantown, West Virginia			10. Project/Task/Work Unit No. 11. Contract (C) or Grant(G) No. (C) (G)
12. Sponsoring Organization Name and Address			13. Type of Report & Period Covered 14.

15. Supplementary Notes

16. Abstract (Limit: 200 words) Data on health related substances found on mine property and potential exposure to chemical and physical agents were collected by the National Occupational Health Survey of Mining for the aplite commodity. One mine was visited for the purpose of collecting this data. One chemical was found on the mine property that was regulated by the Mine Safety and Health Administration (MSHA). Three chemicals were found which had no NIOSH recommendation or MSHA exposure limit set. A list of 19 tradename products to which workers in the aplite commodity were potentially exposed was included. Annual usage was estimated for generic and tradename chemical substances. Potential exposures to the following physical agents were noted: ionizing radiation, noise, and process related temperature. Potential exposures to hazardous musculoskeletal conditions involving only the finger and hand were noted. Two welding processes were in use, arc welding and oxyfuel gas cutting.

17. Document Analysis a. Descriptors

b. Identifiers/Open-Ended Terms NIOSH-Publication, Mining-industry, Miners, Health-hazards, Equipment-operators, Heat-stress, Noise-exposure, Radiation-hazards, Welders, Industrial-hazards

c. COSATI Field/Group

18. Availability Statement	19. Security Class (This Report)	21. No. of Pages 19
	22. Security Class (This Page)	22. Price A03

(See ANSI-Z39.18)

OPTIONAL FORM 272(4-77)
(Formerly NTIS-35)
Department of Commerce