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STANDARD FORM NO. 64

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Office Memorandum • UNITED STATES GOVERNMENT

TO : Sheldon P. Wimpfen, Manager,
Grand Junction Operations Office

DATE: April 30, 1953

FROM : W. B. Harris, Chief, Industrial Hygiene Branch,
Health and Safety Division, New York Operations Office

SUBJECT: VISIT TO CLIMAX MOLYBDENUM COMPANY, GRAND JUNCTION

SYMBOL: HSH:WBH:rlc

On April 6, 1953 I visited the above plant and met Mr. Ralph Toerper, mill superintendant, and Mr. Marvin Kaye, general manager. Mr. Kaye turned me over to Mr. Toerper with whom I superficially inspected the operation. I also discussed various aspects of health and safety connected with the plant operation with Mr. Toerper.

PURPOSE

The purpose of the visit was to determine general health practices used by Climax in their operation of the plant and to get an understanding of the potential health hazards to the plant workers. To this end, the broad outline of the process was learned and the possible extent of worker exposure was noted.

PROCESS

1. The ore which is received from the mines is sent through a sampler from which it is crushed, screened, and wet classified.
2. After classification, the sand is discarded and the slimes are mixed with salt and dried.
3. The drier discharge is mixed with enough slime slurry for suitable feed to a second drier which in turn feeds the open hearth on the top of a roaster.
4. The discharge from the roaster is partially cooled in a rotary heat exchanger with having water spray on its discharge sufficient only to dampen the material.
5. The drier discharge is belt-conveyed to a dissolving area where it is put in water solution and acid leached.

DEPARTMENT OF ENERGY DECLASSIFICATION REVIEW	
SINGLE REVIEW AUTHORIZED BY: <i>Decker 11-14-53 Ltr 4/27/53</i>	
REVIEWER (ADD):	
NAME: <i>Bennis W. Murphy</i>	
DATE: <i>9/14/95</i>	
<input type="checkbox"/> 1. DETERMINATION (CIRCLE NUMBER(S)) <input type="checkbox"/> 2. CLASSIFICATION RETAINED <input type="checkbox"/> 3. CLASSIFICATION CHANGED TO: <input type="checkbox"/> 4. DECLASSIFY ON: <input type="checkbox"/> 5. DECLASSIFICATION AUTHORITY CANCELLED <input type="checkbox"/> 6. SECURITY INFORMATION <input type="checkbox"/> 7. OTHER (SPECIFY):	

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REPOSITORY DoE Rec Hold Cent

COLLECTION R6 326

BOX NO. 326-78-3 # 2

FOLDER MS 3-7 Col. Plat. Area 1949-53

~~RESTRICTED DATA~~

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6. The pulp from this leach contains the vanadium which is fused and cast.
7. The alkaline precipitate of the solution contains the uranium which is dried to 2-4% moisture on an open table.
8. The dried product is pounded through a screen to a drum underneath the drying table.
9. The cast vanadium flake is pounded and packaged.

DISCUSSION

1. The operation of bringing the ore into the plant, reducing it in size, sampling, and feeding to the classifier are very dusty and without any effective control. The dustiness of this operation depends in some measure on the moisture content of the ore but can generally be expected to be severe. Dust samples taken at other locations of comparable dustiness show approximately 10 times the present maximum permissible limit of uranium to be present in the atmosphere.
2. The gaseous effluent from the roaster is accompanied by noticeable chlorine. No sample was taken of this material.
3. The operation of drying and transferring the roaster discharge is very dusty. No sample was taken at this point. However, it should be relatively high in uranium because it has been beneficiated. At the time of the visit, spurts of dust were coming from the discharge end of the drier. It was explained that this was unusual and it was caused by water leakage through pinholes corroded in the drier body.
4. The handling of the alkaline precipitate from the leach solution through to the drumming could result in uranium exposures. This might be expected in the filter press area and in the drying and packaging areas.
5. The handling of vanadium oxide flake and furnace fume has been found to be irritating and might possibly have some toxic effects.
6. Mechanical safety practices in the plant on the basis of this superficial examination appear to be fair to poor.

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7. It does not appear that liquid wastes are removed from the plant in sufficient quantity to create stream pollution. Solid wastes are stored on the site and should not present a problem of leaching.
8. No significant radiation was found in any plant area. House-keeping in this plant was poor.
9. Medical program.
 - a. Pre-employment examinations and periodic examinations are performed on these plant employees. No termination exams are used.
 - b. Medical facilities at Grand Junction are available to the employees and are used by plant management.
 - c. No facilities for treatment are available at the plant.

CONCLUSIONS

1. Several plant employees are exposed during at least a portion of their working day to dust concentrations exceeding the present accepted maximum permissible level of 50 micrograms of uranium per cubic meter of air. Accompanying this uranium in the ore handling areas is a substantial amount of silica bearing dust. A visit of the type which was made can not determine the significance of these concentrations, but it does point the way toward a more careful examination of individual exposures.
2. Exposure to vanadium dust and fume in the fusion and flake handling operations might possibly be high. This too should be studied.
3. With the exception of a possible exposure to chlorine from the roaster effluent, no other toxic exposures should be expected to exist.
4. No radiation hazard exists in the plant.
5. The handling of liquid, solid, and gaseous wastes from the plant appear to be adequate.

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6. With the exception of the lack of an assigned physician, medical practices for the plant personnel are satisfactory.

CC: R. L. Faulkner, RMO, Washington
G. C. Marvin, RMO, Washington
C. L. Dunham, B&M, Washington ✓
Climax Molybdenum Company, Grand Junction

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