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NATIONAL LEAD COMPANY  
OF OHIO  
P. O. BOX 156, MT. HEALTHY STATION  
CINCINNATI 31, OHIO

December 17, 1956

SUBJECT TRIP REPORT TO OLIVER CORPORATION, BATTLE CREEK, MICHIGAN, FROM OCTOBER 31  
TO NOVEMBER 5, 1956  
TO J. A. Quigley, H.M.  
FROM D. E. Carr  
REFERENCE

Objective of Trip

The purpose of this trip was to survey from a health and safety standpoint the process of brigetting green salt, and to assure that the sub-contractor's equipment was left in a non-contaminated condition.

Conclusions and Recommendations

Although the results of air dust samples taken in the survey were considerably over the maximum allowable concentration, it is not felt that the personnel involved in the test were harmed in any way. This is due to two factors; dust respirators were worn during the actual working time, and the time actually involved was very small. However, the air dust results do indicate the need for more adequate ventilation on future tests or production work.

It is concluded that the sources of the high dust concentrations are the hand loading of the mold, the ejection of the brigette from the mold, and the handling of the brigette while placing it in a container. The actual pressing of the material is not believed to be a serious dust producer.

In the event of extended tests or production operation, it is recommended that a mechanical means be provided for loading the mold and that ventilation be provided at the bottom of the die to pick up loose material that breaks free when the brigette is punched out of the mold and ejected onto the die platform.

In order to provide sufficient ventilation a proper type portable dust collector should be made readily available for such tests as this.

The decontamination problem was very slight and can be attributed to the proper and careful handling of the material used.

Background for Trip

Metallurgy Development Plans, Project 405, is concerned with the production scale of brigetting U<sub>2</sub>-magnesium blends.

This work was done on a small scale at the Adams Engineering Company, Cincinnati, Ohio. By making brigettes on a larger scale it is hoped

to increase the length of the material, thus increasing production and decreasing production costs.

In order to duplicate the job on a larger scale a press larger than those available locally was needed. The one located at the Oliver Corporation, Little Creek, Michigan was the only one available.

#### Personnel Assigned

The actual job and contacts made with the Oliver people were set up and followed through by G. Miller of the NIO Metallurgical Department, who supervised the test.

W. Brandenburg	Methods Superintendent
H. G. Walker	Purchasing Agent
A. Berstovitch	Press Operator
J. Seage	Maintenance Foreman

In addition, the following NIO personnel took part in the tests:

Ray Adams	Chemical Operator
William Aulton	Chemical Operator
George Miller	Metallurgical Department

#### Description of Trip

Ventilation on the die was provided by a Spencer portable vacuum cleaner and a specially designed hood. A drawing of this hood is included with this report.

A total of 22 air dust samples were taken. Two of these samples were taken before operations started in order to establish a background. The background was fairly high, with an average of 14  $\mu$  g/m<sup>3</sup>. No reason for this could be determined.

The general air and breathing zone samples were above NAL. General air samples averaged 116  $\mu$  g/m<sup>3</sup>, and breathing zone samples averaged 1306  $\mu$  g/m<sup>3</sup>. A summary of the samples taken is included with this report.

There was a considerable amount of difficulty experienced in pulling the punch from the die. During each pressing material which was built up on the walls of the die chamber prevented the withdrawal of the punch. In order to remove the punch from the die chamber the press was jugged up and down, thus causing the material that had built up on the chamber wall to become airborne and creating an airborne radioactive dust problem.

In order to complete the job the punch and die chamber had to be lubricated. The material that had built up on the chamber wall and the side of the punch had to be removed with steel wool and emery cloth after each pressing. This caused excessive dusting and added to the airborne contaminant problem.

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WASHINGTON, D. C. 20535, 1960

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It was found that the punch walls were being scored, thus enabling more material to squeeze between the punch and the chamber walls. When the pressure was applied, visible amounts of dust were observed escaping from the top of the die extruding more to the health problem involved.

Before another operation of this type is undertaken some modification should be made on the punch and die chamber for the purpose of controlling and minimizing the airborne dust.

The die and press were monitored with a 2010-A G.M. counter after operations were completed and clean-up was accomplished. The contaminant levels were found to be non-detectable.

#### Miscellaneous Comments

The Oliver Corporation personnel were very courteous and extended all of the help that was possible. Special-made stops for the press were provided on request as the operation appeared quite unsafe as it was originally started. Safety rules as laid out were observed very diligently.

The ICA chemical operators are to be commended on their fine handling of their part of the operation. They handled the materials as carefully as could be done under the circumstances. As spillage was held to a minimum, loose material was confined to the press area.

#### Comments

None

ORIGINAL SIGNED BY

R. H. Carr

REC:lg

Attach. (3)

cc: G. A. Under (2) - Attach.  
E. L. Westherton - Attach.  
D. Miller - Attach.  
J. G. Davis - Attach. ✓  
C. Tolson - Attach.

Central File - Attach.