

OH. 273

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### Metallurgical Laboratory

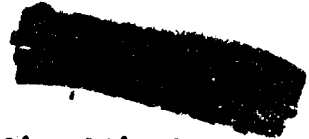
REFERENCED DOCUMENT

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*Dec. 153 H. Canwell*  
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Process is carried on in a wired off enclosure about 20' x 14' of a larger room. Two lathes are at present concerned in the process. Ultimately it is planned to have four lathes working on the material.

Material is stored in wooden box about 12' x 3' x 4', with 1/2" (est.) sides. Amount at present covers only the bottom 6" - 8" (depth). The box is located near the midportion of one wall. One lathe is about 3' from it. Scrap from machining is kept in wooden boxes next the opposite wall.

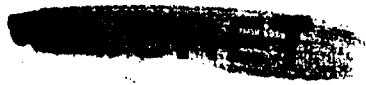
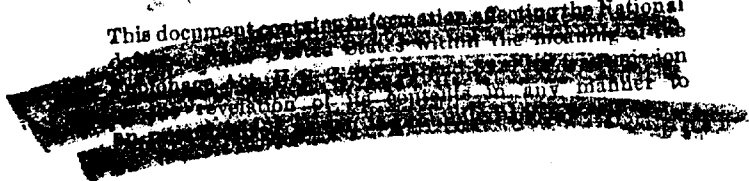
The process consists of mounting the rod in the lathe, turning the bar down to the required diameter, cutting off the bar at the desired length, then repeating the process until the bar is used up. Throughout the process, the metal is cooled and lubricated by a stream of water plus water soluble oil. The turnings have been allowed to accumulate in the bottom part of the lathe.

The billets thus formed are put on another lathe and the ends smoothed off. Then the billets are packed in wooden boxes for shipment. These are stored in one corner of the room, pending shipment.

#### HEALTH HAZARDS

1. Dust. The oil and water lubricating process seems to keep the dust out of the air. None was noted on the floor, or in the air. It is of importance, however, to keep the fluid stream on the area being machined at all times.
2. Fumes, seem to be the more important hazard. The metal frequently catches on fire while being machined or filed. At such times the odor noted so frequently in the W.S. and Basement Shops is present. Many times the men are slow to put out the fire, allowing more fumes to be produced than is necessary.
3. The practice of allowing a large amount of shavings to accumulate in the basin of the lathe is a poor one. The chips represent a definite fire and fume hazard. I understand that several fires have occurred in the past.
4. Skin. The metal is handled with gloves only when the rods are mounted on the machine. From that stage on the handling has been with unprotected hands.
5. Fire Hazard (mentioned above). The Oil-water lubricating mixture seems to act satisfactorily as a fire extinguisher. Several pails of water should be available to act as auxillary fire extinguishers.

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# Metallurgical Laboratory

-2-

## RECOMMENDATIONS FOR HEALTH PROTECTION

1. Storage of metal in amounts present on 4/13/43, seems to be satisfactory (judging by the electroscope readings). If larger amounts are to be stored (as is probable) would recommend lead sheathing on five sides of the box (bottom rests on concrete floor). If necessary a pully arrangement can be used to raise the lid of the box.
2. Handling of the metal. Leather gloves should be worn whenever possible. The gloves should be cleaned weekly at least, or oftener if necessary. They should be replaced when the leather begins to deteriorate. It is difficult to see how the machinists can wear gloves and do their work, however, all of the rest of the handling can be done with gloves. The process of checking and packing of the billets for shipment, which is now done bare-handed, can be devised so that one man does the actual handling and one man does the writing. In that way, leather gloves could be worn by the man doing the packing.
3. All scrap material should be stored in covered metal containers. The use of open-topped wooden boxes is unsatisfactory.
4. The turnings from the lathe should not be allowed to accumulate for more than a few hours working time, or until they are a few inches deep. On 4/13/43 about 6 hours worth of scrap was allowed to pile up. This represents a preventable fire and fume hazard.
5. Sweeping of the floor should be done wet. One means is to use wet sawdust.
6. If any grinding is to be done, the grinding wheel should be completely encased, save for an area large enough to permit the operation. The enclosing jacket should be of metal. It should be connected to a suction system so that the amount of the dust present within the jacket is kept at a minimum. It is suggested that the connection between the jacket and the suction system be placed at the lowest part of the jacket.
7. Goggles should be provided for men doing any grinding operations
8. Ventilation. In view of the fume hazard, means to provide a constant flow of air, independent of the opening of windows should be provided. This is an important point.
9. The men should be instructed to bathe daily and to be careful to clean their hands and faces thoroughly before eating, and when leaving for the day. This point is important as careful body hygiene is an important factor in

## Metallurgical Laboratory

-3-

avoiding any danger which results from contact with the metal. Adequate wash basins with an abrasive soap and hand brushes should be provided. Nail files should be hung near or on the washstands. Paper towels should be used rather than allowing the men to use their own towels.

10. In view of the fume hazard, it is advisable that all personnel within the closed area be provided with fume masks which are to be worn at all times. Such masks can be obtained from the American Optical Company or Willson. One person should be assigned the task of keeping the masks clean, in repair, and seeing to replacement of the filters as they become dirty.

### B & T METALS

On the last visit, 4/14/43, a run of 125 billets was observed. The procedure of blowing out the heating cylinder was not used. In spite of this, however, the measurements made (see below) indicated marked contamination of the air. Because of this it is now felt that some means of reducing the amount of metal in the air to less than a 0.15 mgm per cubic meter must be installed.

The recommendations made, with some exceptions, in an earlier communication have not been carried out as yet. I understand that they are to be put into effect as soon as possible.

Dr. Mahanna's services have been acquired by B & T. He is at present examining the employees who are working with the metal. X-ray films of the chest, complete blood counts and urinalyses are being obtained.

Measurements made with a Lauritson electroscope would indicate that conditions in the storage room were satisfactory. It must be emphasized again that the metal should not be stored bare, but should be left in the shipping boxes until it is to be used.

Measurements of the bare metal were made. These emphasize the importance of wearing leather gloves at all times when handling the metal. I found that the workers were careful in this respect, but that the foreman, inspectors, etc., were forgetful.

JJN/w

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