

UNITED STATES ATOMIC ENERGY COMMISSION

COMPLIANCE INSPECTION REPORT

1. Name and address of licensee or permit holder				2. Date of inspection	
National Lead Company Instrumentation Department St. Louis Smelting & Refining Division Fredericktown, Missouri				April 21, 1958	
				3. Type of inspection	
				Initial	
				4. 10 CFR part(s) applicable	
				20 and 30	
5. License (or permit) number(s) and expiration date(s)					
Number	Date	Exp. date	Number	Date	Exp. date
24-3090-1	10-1-57	10-31-59			

6. Scope of license(s) and permit

1. 75 mc, Cobalt 60, Instruments, Inc. Model B-20-14 sealed sources (3 sources of 25 mc each), for use in three Instruments, Inc. source holders Model B-20-06 to determine level of liquids in autoclaves.
2. 200 mc, Cobalt 60, Instruments, Inc. Model B-20-14 sealed sources (4 sources of 50 mc each), for use in four Instruments, Inc. source holders Model A-83-13 to determine level of liquids in autoclaves.

7. Special conditions and limitations of license(s) or permit

11. Byproduct material to be used by, or under the supervision of, S. E. McDowell.
12. Byproduct material licensed as sealed sources shall not be opened or combined.

8. Inspection findings

The use of 60 sources in gauge devices to determine the level of liquids in autoclaves by the National Lead Company at Fredericktown, Missouri is limited to the use of four sources. However, there are ten additional sources in storage and 187 mc is present rating of the fourteen sources combined. Records showing the receipt of these sources are being kept in the Purchasing Agent's office. Radiation surveys are being made but a record of these surveys is not being maintained. The 40 sources not in use are being stored in an unshielded container and the existing radiation field is in excess of 5 mR/hr. The lead storage shields are stored appropriately but there is no marking in the glass box of the sources. Sources are being used.

Items of noncompliance: Radiation in the storage container is excessive. Records of receipt, radiation monitoring, and disposal.

Comments: Radiation surveys are being being made but a record of the radiation surveys is not being maintained. See paragraph 12 of report for details.

9. Give date of last previous inspection

11. Is "Company Confidential" information contained in this report?

Specify pages and reasons:

May 6, 1958

(Date report prepared)

If additional space is required for any additional items above, the continuation may be extended to the reverse of this form using care to avoid confusion. Having indicated space to be used for continuation, identify each item by number and prefix "Continued" on the top of form sheet or separate form.

Continuation of this report should be run first in a separate covering memorandum

9. Items of noncompliance (continued)

10 GFR 20.191 Permissible levels of radiation in unrestricted areas.

(b)(1) and (2) Continuous radiation field in unrestricted area is in excess of 2 mr/hr and 100 mr/seven consecutive days. See paragraph 21 of report details.

10 GFR 20.203 Caution signs, labels, and signals.

(f) There is no posting of containers in the Glave Bay of the Process Building where the sources are used to determine liquid levels in autoclaves. See paragraph 24 of report details.

10 GFR 20.207 Storage of licensed material.

The storage containers are not secured against unauthorized removal from the place of storage. See paragraph 21 of report details.

## I. GENERAL INFORMATION

- Mr. S. E. McDowell, Instrument Foreman  
Mr. E. W. Glavens, Instrument Supervisor

19. Two things 30 in. to 35 square in. are installed in the cathodic protection and one cover cathodic located in the lower bay of the



Process Building. The sources are contained in the ends of 6 ft. long hollow steel rods. These rods are mounted downward in the tops of the 8 ft. in diameter by 16 ft. high autoclaves so that the sources are positioned in the center of the autoclaves six feet from the tops. The one 25 mc Co 60 source in use is mounted on the side of the 4 ft. in diameter by 10 ft. high mine autoclave four feet from the top. The mine autoclave is also located in the Clave Bay of the Process Building. This 25 mc Co 60 source is shielded by a lead shield  $8\frac{1}{2}$  inches thick on the top and bottom and  $1\frac{1}{2}$  inches thick on the sides. Ionization chambers are strategically located on the sides of the autoclaves so that the liquid level in each tank is recorded on a panel board located on the twenty-foot level of the Process Building.

20. Mr. McDowell stated that the autoclaves require overhauling on an average of about once every two weeks. When either of the two oxidation autoclaves or the copper autoclave require overhauling, an instrument man removes the 6 ft. long steel rod containing the Co 60 source and places it in a  $1\frac{1}{2}$  inch thick by 3 ft. high lead shield located at a distance of 10 ft. from the autoclaves. Mr. McDowell stated that the Co 60 source is stored in this temporary shield for as long as 48 hours and that the radiation field existing is 20 mr/hr at 15" from the side of the temporary shield. He further stated that there is some difficulty in keeping maintenance men away from this radiation field.

### III. STORAGE AND WASTE DISPOSAL

21. The six 50 mc Co 60 sources and the four 25 mc Co 60 sources not in use are being stored in  $8\frac{1}{2}$  inch thick lead shields located on the ground and in the open at the north end of the plant and just 25 feet inside the perimeter fence. This location is 40 ft. north-east of the Instrument Shop. Although all of these sources are presently rated at 69% of their original strengths, readings taken with a Rotatron Survey Meter, model 20-4, gave a maximum reading of 50 mr/hr at 25 ft. from the sides of the shields. The lead shields are not locked and no physical barriers are being used to prevent plant personnel from entering the storage area. Mr. McDowell stated that he realized that a better storage facility is needed but that the present location is fairly well isolated from the activities of plant employees and it is only infrequently that anyone is required to be near the storage area. He was pointed out to Mr. McDowell and Mr. Stevens that, even so, under present conditions the storage location could not be called a restricted area and the level of radiation exceeded that permitted in an unrestricted area. Section 20.101 concerning permissible levels of radiation in unrestricted areas and Section 20.102 concerning storage of licensed material were pointed out to and discussed with Mr. McDowell and Mr. Stevens. Both stated that they would ask their management for approval to construct a concrete storage facility and that they would immediately move the storage area to a location at least ten feet from the perimeter fence and place them in a large lead lined wooden box that would be kept locked. There is no waste disposal problem.

### IV. CONTROL AREA

22. A personnel monitoring program is not in effect. Mr. McDowell stated that the four instrument men who handle the sources on occasion wear Victoreen self-reading dosimeters and that these dosimeters never show accumulated readings in excess of 50 mr/hr for a week.

Page 4  
National Lead Company  
St. Louis Smelting and  
Refining Division  
Fredericktown, Missouri  
License No. 24-3090-2

23. Mr. McDowell stated that radiation surveys had been made in the Clave Bay of the Process Building where the sources are used and stored temporarily and around the location where the extra sources are stored but that no record of these surveys has been kept. Section 20.401(c) pertaining to the maintaining of records of surveys was pointed out to and discussed with Mr. McDowell and Mr. Slavens. Both stated that they would start maintaining records of radiation surveys.
24. The lead storage containers were posted appropriately but there was no posting in the Clave Bay of the Process Building where the sources are used to measure the liquid levels in autoclaves. Section 20.203 (f) pertaining to the posting of containers was pointed out to and discussed with Mr. McDowell and Mr. Slavens. Both stated that they would post these containers immediately with appropriate signs.

