

U. S. NUCLEAR REGULATORY COMMISSION

REGION II

Docket No.: 999-90002

License No.: N/A

Report No.: 999-90002/96-08

Site Name:  
(nonlicensee) Herman Strauss Industries

Location: Thirty-fifth & McColloch Streets  
Wheeling, WV 26003

Date: October 7-8, 1996

Inspectors: Jay L. Henson, Radiation Specialist

Approved by: John P. Potter, Chief  
Materials Licensing/Inspection Branch 2  
Division of Nuclear Materials Safety

Enclosure

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## EXECUTIVE SUMMARY

Herman Strauss Industries  
NRC Inspection Report No. 999-90002/96-08

This reactive, announced inspection was conducted to assist the Environmental Protection Agency (EPA) in its response to a report of abandoned radioactive material at a scrap metal recycle yard. On October 4, 1996, a consultant for Herman Strauss Industries, Wheeling, West Virginia, informed Region II (RII) staff of the discovery of radioactive material in a truck load of metal scrap. The consultant further reported that a hand-held survey meter used to survey the material read greater than 2.0 rad/hour a few inches from the radiation sources. Discussions with the consultant indicated that the radioactive material was securely stored at the metal scrap yard facility.

Since the nature, radionuclide and licensing status of the material was unknown, the EPA was the lead Federal agency for the Federal response under the Federal Radiological Emergency Response Plan. An EPA official in the Wheeling area was contacted and he requested that RII assist him in his response to the incident. A RII inspector was dispatched to the site on October 7, 1996. The conduct of this inspection included discussions with cognizant facility representatives, and direct observations and radiological surveys of the site.

### Initial Site Management Meeting

- Initial discussions with site management personnel indicated that some of the information contained in the initial report was incorrect.

### Interviews

- Two individuals involved in the discovery, removal and storage of the radioactive material handled the sources during these activities.

### Facility Inspections

- The sources were securely stored in a closet inside a storage room at the rear of the main office building.
- The measured dose rates around the storage area and from the surface of the bucket over the pail in which the sources were stored were low (a few millirem/hour).
- No removable contamination was found in the storage room where the sources were handled and placed in storage.
- No other sources were found during walk-through surveys of the facility.

### Reenactment of the Incident

- Two individuals were in close proximity to the sources for 10-20 minutes.
- One individual held each source independently for 10-60 seconds, and a second individual held both sources simultaneously in the same hand for 2-4 minutes.

## LIST OF PERSONS CONTACTED

Environmental Protection Agency

J. Dodd, On Scene Coordinator

Herman Strauss Industries

C. Strauss, President

K. Burns, Vice President

N. Carr, Foreman, Non-Ferrous Metals

## REPORT DETAILS

### 01. Initial Site Management Meeting (87103)

The inspector met with the President and Vice President of Herman Strauss Industries (HSI) and with the EPA's On Scene Coordinator (OSC) at the site on the morning of October 7, 1996. The EPA OSC and the RII inspector explained the purpose of the inspection, the techniques to be used in conducting the inspection, the scope of the work, and the expected duration. Those present then discussed the event to clarify the information received in the initial report and to identify those personnel involved in the incident so they could be interviewed later.

As described during this discussion, on the afternoon of October 2, 1996, the stainless steel scrap stored inside the non-ferrous metals warehouse was loaded onto a trailer for sale to another scrap vendor. On the morning of October 3, 1996, the trailer was weighed on a scale at the HSI outdoor scrap yard located approximately 0.5 miles from the non-ferrous metals warehouse. A radiation detector mounted over the scale alarmed and the scale operator informed the driver that the trailer contained radioactive material.

The trailer was returned to the loading dock at the non-ferrous metals warehouse. The foreman of the non-ferrous metals operation obtained a survey meter and determined the approximate location of the radiation source within the trailer. The scrap was slowly removed from the trailer and surveyed until the radiation source was found and removed. The source was a small stainless steel bar approximately six inches long, one-half inch wide, and one-eighth inch deep.

The foreman then surveyed the bin inside the warehouse where the scrap stainless steel had been stored before loading on the trailer. The foreman found a second radiation source and placed it on the loading dock with the first source. The second source was of similar dimensions as the first with the exception that it was approximately 14 inches long. The sources had screws on both ends that passed through the widest dimension of each source and appeared to be used to attach the sources to some other device. At least one of the sources had some markings that included a red outline (circle or square) that contained some letters and/or numbers. When surveyed individually, the foreman noted that the survey instrument exceeded its maximum radiation level of 200 mrem/hour at a distance of one to two feet from each source.

The foreman contacted the Vice President (VP) and told him he had the two sources on the loading dock. The VP went to the loading dock, picked up the two sources, and carried them to the storage room at the rear of the main office building. The foreman obtained some sheet lead to wrap around the sources. The VP bent the longer source in half, and handed both sources to the foreman to wrap in the lead sheet. The encased sources were placed in a plastic pail which was placed in the mop closet in the storage room. A 5 gallon metal bucket was turned upside down and placed over the pail. The two entrances to the storage room were secured and the office employees were told to stay out of the room.

HSI contacted its radiation safety consultant to discuss the incident. The consultant reported the incident to RII on October 4, 1996. After discussions with RII staff regarding the incident, a physicist from Wheeling Hospital volunteered to go to the site and survey the sources. The physicist measured 25 mrem/hr at the surface to the lead encasing the sources and 4 mrem/hr at one meter from the lead encased sources. He informed RII that the sources were properly secured.

Based upon its preliminary investigation into the incident, HSI stated that the sources most likely entered the warehouse through their "walk-in" metal scrap receiving area. This is the area where private individuals bring scrap such as aluminum cans and other metal waste for sale to HSI. This scrap receiving point is the only one at HSI which is not monitored with a radiation detection device. Although HSI records the name and license plate number of each of the hundreds of individuals that deliver scrap to this receiving point each month, they do not record a detailed description of each item received. The materials received at this point are sorted according to type of metal and transferred to the proper bin for storage and subsequent disposition. HSI thought the sources had been at the site for approximately 30 days because the stainless steel bin is routinely emptied every 30 days for resale to another scrap dealer.

## 02. Interviews (87103)

The inspector and the EPA OSC interviewed several HSI staff to obtain an accurate a description of the incident. They interviewed the President, the VP and foreman involved with the discovery, recovery and storage of the sources, and some of the HSI employees who were familiar with the incident but not directly involved. The information obtained during these interviews essentially matched the description of the event as described Section 01 above.

During the interviews, the inspector tried to get an approximation of the exposure times for the VP and the foreman who were involved in the discovery, recovery and storage of the sources. The VP estimated that he was in close proximity to the sources for no more than 10 minutes. He also stated that he carried both sources in his left hand from the loading dock to the office storage room and that this only took a couple of minutes. The foreman stated that he held the first, smaller source for only a few seconds, the second one for less than a minute and was in close proximity to the sources for less than 10 minutes. The VP and foreman confirmed that they were the only two HSI employees that got near the sources during the incident.

Based upon the results of these interviews, the inspector concluded that the incident occurred essentially as described in Section 01 above.



### 03. Facility Inspections

The inspector examined the storage room at the rear of the main office where the sources were stored. The storage room has two entrances, one directly from the outside, and one from a corridor inside the office building. The outside door was locked and is connected to a security alarm. At the time of the inspection, the interior door could not be locked to prevent entrance into the room from the corridor. The VP stated that he would have the door knob reversed so that the door could be locked to prevent entrance from the corridor. The mop closet door was not locked at the time of the survey, but was locked at the conclusion of the survey. The inspector provided a "CAUTION RADIOACTIVE MATERIALS" sign to HSI for posting on the mop closet door and the storage room door that enters the room from the office corridor. A "CAUTION RADIATION AREA" was also placed on the mop closet door.

The inspector surveyed the building exterior, the storage area and the surface of the metal bucket which was placed over the lead encased sources with an Eberline RO-2 survey meter (SN 607, calibrated January 25, 1996). The dose rates measured on the exterior surfaces of the building around the mop closet ranged from 0.2 to 0.4 mrem/hr, the maximum dose rate measured at the mop closet door was 2.5 mrem/hr and the maximum dose rate measured on the surface of the metal bucket was 6 mrem/hr.

The inspector also obtained contamination smears from the surfaces in the storage room where the sources were placed prior to encasement in the lead sheets. Wipes were taken from a table surface, the floor in front of the table, the floor near the metal bucket, and the metal bucket surface. These wipes were monitored with a Ludlum Model 3 survey meter (SN 102549, calibrated January 25, 1996) equipped with a GM "pancake" probe. The inspector did not detect any radiation above the background level of 30 counts per minute on the wipes. The inspector also used this meter to survey the hands of the VP and the foreman that handled the sources and did not detect any radiation levels above background.

The inspector performed a "walk-through" survey of the non-ferrous metals warehouse with a Ludlum Model 19 microR meter to determine if any other sources were present. No other sources were detected during this survey. The inspector also rode the route used by the driver to transport the trailer from the warehouse to the outdoor scales to determine if any other sources may have dropped from the trailer during transport. The inspector did not detect any other sources along the route to the scales or returning from the scales.

Based on the survey results, the inspector determined that the sources were securely stored, that the dose rates in and around the storage room were within acceptable limits (only a few millirem/hour), there was no removable contamination in the storage room, the hands of the two individuals who handled the sources were not contaminated, and that no other detectable radiation sources were within the non-ferrous metals

warehouse or along the route used by the trailer to transport the scrap from the warehouse to the scales and return.

#### 04. Reenactment of the Incident

The inspector asked the VP and the foreman to independently walk through the events associated with the incident and to demonstrate the actions each took during the incident. This was done to get a better understanding of the times and distances associated with each individuals exposure to the sources.

Based upon these discussions and reenactments, the inspector estimated the following exposure times:

##### Foreman's Exposure Times

Discovery of 1st source: Close proximity - 1 minute  
In hand - 10 seconds

Discovery of 2nd source: Close proximity - 1 minute  
In hand - 30 seconds

Transport from warehouse  
to office storage room: Close proximity - 2 minutes

Encasement in lead sheet: Close proximity - 5 minutes  
In/near hand - 1 min

##### VP's Exposure Times

Transport from warehouse  
to office storage room: Close proximity - 2 minutes  
In hand - 2 minutes (both sources)

Bending longer source: Close proximity - 30 seconds  
In hand - 20 seconds

Encasement in lead sheet: Close proximity - 5 minutes  
In hand - 30 seconds

## EXIT MEETING SUMMARY

The inspector discussed the inspection results with Mr. Dodd and Mr. Strauss and his staff on October 8, 1996. The inspector informed Mr. Dodd and Mr. Strauss that the sources were adequately secured and that the radiation levels around the storage area were low and well within regulatory limits. The inspector recommended to Mr. Dodd that the lead sheets around the sources only be removed by someone who is prepared to deal with potential contamination that may be present. The inspector informed Mr. Strauss that the EPA would remain the lead Federal agency for this incident unless it is determined that the radiation sources are subject to the NRC regulations and licensing requirements.

## INSPECTION PROCEDURES USED

IP 87103: Inspection of Incidents at Nuclear Materials Facilities