



UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION I
2100 RENAISSANCE BOULEVARD, SUITE 100
KING OF PRUSSIA, PENNSYLVANIA 19406-2713

January 13, 2014

Docket No. 99990001
EA-13-244

General License (10 CFR 31.5)

Alan Rogers
Plant Manager
Kuehne Company
PO Box 294
1645 River Road
Delaware City, DE 19706

SUBJECT: NRC INSPECTION REPORT NO. 99990001/2013005, KUEHNE COMPANY,
DELAWARE CITY, DELAWARE

Dear Mr. Rogers:

On November 26, 2013, Farrah Gaskins and Betsy Ullrich of this office conducted a safety inspection at the above address of activities authorized by the above listed NRC general license. The inspection was limited to a review of the loss of a fixed gauge containing sealed source serial number 959-4-88. Additional information discussed in the telephone conversation on December 16, 2013, between you and Ms. Drazek of your organization and Betsy Ullrich and Farrah Gaskins of this office, was also examined as part of the inspection. The findings were discussed with you and Ms. Drazek of your organization at the conclusion of the inspection. The enclosed report presents the results of this inspection.

Based on the results of this inspection and in accordance with the NRC Enforcement Policy, the NRC has determined an apparent violation of NRC requirements occurred. The violation involved improper transfer or disposal of a generally-licensed fixed gauge, resulting in the source from the gauge being found at a scrap yard in Coatesville, Pennsylvania on October 31, 2013. The NRC is in the process of determining the severity level of the apparent violation and the appropriate enforcement action. This information will be provided to you in future correspondence.

During our inspection discussions on November 26 and December 16, 2013, Ms. Drazek indicated that your staff searched the entire Delaware City facility to ensure that no other fixed gauges were on site. You also stated that you took the following actions to obtain information about source serial number 959-4-88: records search, employee interviews, and discussions with your vendors for waste disposal and scrap metal removal. Based on these actions, you stated that you do not currently possess any NRC materials in Delaware City, and have very little information about the gauge containing source serial number 959-4-88. In addition, you confirmed that you are working with the Pennsylvania Department of Environmental Protection to properly dispose of the source found at the scrap yard. You further stated that you are committed to be in compliance with NRC regulations.

In accordance with 10 CFR 2.390 of the NRC's "Rules of Practice," a copy of this letter, its enclosure, and your response, if you choose to provide one, will be made available

electronically for public inspection in the NRC Public Document Room or from the NRC document system (ADAMS), accessible from the NRC website at <http://www.nrc.gov/reading-rm/adams.html>. To the extent possible, your response should not include any personal privacy, proprietary, or safeguards information so that it can be made available to the Public without redaction.

Current NRC regulations and guidance are included on the NRC's website at www.nrc.gov; select **Nuclear Materials; Med, Ind, & Academic Uses**; then **Regulations, Guidance and Communications**. The current Enforcement Policy is included on the NRC's website at www.nrc.gov; select **About NRC, Organizations & Functions; Office of Enforcement; Enforcement documents**; then **Enforcement Policy (Under 'Related Information')**. You may also obtain these documents by contacting the Government Printing Office (GPO) toll-free at 1-866-512-1800. The GPO is open from 8:00 a.m. to 5:30 p.m. EST, Monday through Friday (except Federal holidays).

Please contact Betsy Ullrich at (610) 337-5040 if you have any questions regarding this matter.

Sincerely,

Original signed by Daniel S. Collins for

James W. Clifford, Director
Division of Nuclear Materials Safety

Enclosure:
Inspection Report No. 99990001/2013005

cc w/enclosure:
Jill Drazek, Environmental, Safety and
Security Manager
State of Delaware

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Please contact Betsy Ullrich at (610) 337-5040 if you have any questions regarding this matter.

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James W. Clifford, Director
Division of Nuclear Materials Safety

Enclosure:
Inspection Report No. 99990001/2013005

cc w/enclosure:
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OFFICE	DNMS/RI				
NAME	JClifford/dsc f/				
DATE	01/13/14				

*see previous concurrence

EXECUTIVE SUMMARY

Kuehne Company
NRC Inspection Report No. 99990001/2013005

On Thursday, October 31, 2013, representatives from the Pennsylvania Department of Environmental Protection (PADEP) responded when a radioactive source was found at a scrap metal facility in Coatesville, Pennsylvania. PADEP staff contacted the NRC on November 1, 2013, requesting assistance. PADEP staff identified the source as cesium-137 (Cs-137) with an estimated activity of 10 millicuries and source serial number, "959-4-88," using photos of the source. The NRC staff determined that the source was initially distributed by Berthold Systems, Inc. (Berthold), License No. 37-21226-02G, to Chloramone Corporation (Chloramone) in Delaware City, DE on August 26, 1988, under the general license in 10 CFR 31.5. The source was contained in a fixed gauge device, Model LB 7400 D Clamp-on Density Gauge.

Chloramone was acquired by Kuehne Company (Kuehne) in 1989. Based on documents reviewed, the name "Chloramone" continued to be used for some period of time after the purchase but the facility is now known as Kuehne. NRC and Kuehne staff could not find any documentation related to the transfer of the gauge containing source serial number 959-4-88 from Chloramone to Kuehne at the time of the purchase. Kuehne Company purchased a fixed gauge for the Delaware City facility in 1991, and two fixed gauges for their Kearny, New Jersey facility in 1989 and 1990. The latter three gauges were registered as required by the NRC. However, Kuehne staff were unaware of the gauge that was originally purchased by Chloramone, and it was not included in the general licensee registration. Kuehne has records of the transfer and disposal of the three other fixed gauges, but no record of the transfer or disposal of the gauge containing source serial number 959-4-88.

The NRC determined that Kuehne Company failed to properly transfer or dispose of a device possessed under the general license described in 10 CFR 31.5, which is an apparent violation of 10 CFR 31.5(c)(8). Specifically, Kuehne Company did not properly transfer or dispose of a device containing source serial number 959-4-88, which was found on October 31, 2013, in a scrap yard in Coatesville, Pennsylvania, a facility which was not authorized to receive the source.

REPORT DETAILS

1.0 Event Overview and Background

On Thursday, October 31, 2013, representatives from the Pennsylvania Department of Environmental Protection (PADEP) responded when a radioactive source was identified at the Coatesville Scrap facility in Coatesville, Pennsylvania. The source was identified in an outbound load of scrap as it was passing through radiation detectors. PADEP staff identified the source as cesium-137 (Cs-137) and estimated the activity to be about 10 millicuries. PADEP staff ensured that the source was secured, and took photos of the source. They contacted the NRC on November 1, 2013, for assistance in identifying the source and its owner, and reported this information to the NRC Operations Center on November 7, 2013 (Event Number 48513).

The scrap yard does not know when the source arrived at its facility, but staff there told PADEP inspectors that typically scrap material is on site less than two weeks. The source was found without its gauge housing, and is very small, with its longest dimension less than 1 inch. The source may have been among small metal scrap debris for a longer period of time.

PADEP staff identified the source's serial number as "959-4-88" using photos of the source, and worked with the NRC to identify the origin of the source. Using the General License Tracking System (GLTS) and other NRC records, the NRC determined the source was initially distributed by Berthold Systems, Inc. (Berthold), License No. 37-21226-02G, to Chloramone Corporation (Chloramone) on August 26, 1988, under the general license in 10 CFR 31.5. The source was contained in a fixed gauge device, Model LB 7400 D Clamp-on Density Gauge.

Chloramone was acquired by Kuehne Company (Kuehne) in 1989. PADEP and NRC staff members contacted Kuehne Company for additional information related to the source.

2.0 Inspection Activities

a. Inspection Scope

The inspectors interviewed Kuehne staff members to determine the extent of management oversight of the devices they possessed under a general license in Delaware City, Delaware. The inspectors also discussed Kuehne's investigation into use of gauges at the Delaware City facility, and reviewed the information from the Kuehne records and NRC records.

b. Observations and Findings

The Kuehne investigation into the use of gauges at their Delaware City facility was led by the Environmental, Safety & Security Manager and the Plant Manager. Kuehne staff performed a complete search of all process lines at the Delaware City location, and did not find any fixed gauges currently in use at the facility. The Kuehne managers identified one current employee, who worked at the Delaware City location in the late 1980's and was familiar with the use of fixed gauges at this location. The employee recalled that one gauge was on the "caustic dilution" line, and believed this was the

gauge that was purchased by Chloramone in 1988. The other gauge was on the “bleach dilution” line, and believed this was the gauge purchased by Kuehne in 1991. These process lines were located in separate buildings until about 1999, when a new facility was built. Current staff at Kuehne were not certain when the old process lines were moved or disposed of. The facilities housing the old process lines no longer exist.

In addition to the fixed gauge purchased by Chloramone Corporation in 1988, Kuehne Company possessed three other fixed gauges under the 10 CFR 31.5 general license: two fixed gauges located in their Kearny, NJ facility (source serial number 2131-8-89 in a Berthold Model LB 379 In-Line Density Gauge purchased in 1989, and source serial number 854-3-90 in a Berthold Model LB 7442 D Clamp On Density Gauge purchased in 1990) and one in Delaware City, DE (source serial number 734-8-90 in a Berthold Model LB 7400 D series Point Source purchased in 1991).

Kuehne managers searched company records for information about the fixed gauges in Delaware City and located only two documents related to source serial number 959-4-88: a record of a leak test from 1989, and a July 16, 1990, response to an NRC “Survey of General Licensees.” All other records identified for Kuehne’s Delaware City facility were for source serial number 734-8-90. These included purchase documents, a 2004 report, and the 2005 disposal documents. Kuehne managers also reviewed their records for the fixed gauges used in the Kearney, NJ facility. Records of purchase and disposal were available for those gauges.

The NRC noted that the device containing source serial number 959-4-88 was received by Chloramone Corporation in 1988. In 1989, Chloramone Corporation was purchased by Kuehne Company, a transfer that did not meet the exception in 10 CFR 31.5(c)(9) for transfer of a device in use at a location. However, the NRC has no report or record of the transfer. Based on records reviews, Kuehne staff were not aware of the presence of the device and did not account for the device. The device was transferred at an unknown date and was not accounted for until its source, serial number 959-4-88, was discovered at the scrapyards in 2013.

The NRC determined that Kuehne staff maintained oversight of three fixed gauges that were purchased by Kuehne Company, and properly disposed of these three gauges. Kuehne staff found only two records of the fixed gauge that was purchased by Chloramone in 1988, prior to its purchase by Kuehne. Chloramone did not report this transfer to the NRC. Subsequent reports to the NRC from Kuehne staff did not include information about the fixed gauge containing source serial number 959-4-88.

10 CFR 31.5(c)(8) requires, in part, that any person who acquires, receives, possesses, uses or transfers byproduct material in a device pursuant to a general license shall, except as provided in 10 CFR 31.5(c)(9), transfer or dispose of the device containing byproduct material only by transfer to persons holding a specific license pursuant to 10 CFR Parts 30 and 32 or from an Agreement State to receive the device. The failure to transfer the device containing source serial number 959-4-88 only as authorized is an apparent violation of 10 CFR 31.5(c)(8).

c. Conclusions

The NRC determined that Kuehne Company failed to properly transfer or dispose of a device possessed under the general license described in 10 CFR 31.5, which is an apparent violation of 10 CFR 31.5(c)(8). Specifically, Kuehne Company did not properly transfer or dispose of a device containing source serial number 959-4-88, which was found on October 31, 2013, in a scrap yard in Coatesville, Pennsylvania, a facility which was not authorized to receive the source.

3.0 NRC Records Review

a. Inspection Scope

The inspectors searched the General License Tracking System (GLTS) and the Agencywide Documents Access and Management System (ADAMS) for records related to source serial number 959-4-88, Chloramone Corporation, and Kuehne Company. The NRC reviewed the records to determine when the source was in use, and when information about the source was submitted.

b. Observations and Findings

Based on the records found, inspectors determined that source serial number 959-4-88 was shipped in a Model 7400 LB Clamp-On Density Gauge from the distributor (Berthold) to Chloramone Corporation in Delaware City on August 26, 1988. Contact Person A, from Chloramone, responded to an NRC survey of general licensees on July 16, 1990, and included a leak test report dated January 31, 1989, for source serial number 959-4-88.

In 2001, when the NRC was developing a registration program for certain sources possessed under a general license, a General License Registration was sent to Chloramone Corporation in Delaware City requesting information about source serial number 959-4-88. This form was pre-printed with the information that the NRC had in GLTS for source serial number 959-4-88, based on the 1990 survey information submitted by Chloramone and the distribution report submitted to the NRC by Berthold in 1988. The form requested that information be corrected if necessary. Unknown to the NRC, by this time, Kuehne had purchased Chloramone. Contact Person B from Kuehne submitted the response dated July 9, 2001, and corrected the information as follows: device model LB 7440; source serial number 734-8-90; receipt date April 2, 1991; and the company name as "The Chloramone Company." After this, all General License Registration forms sent by the NRC to the Delaware City location contained the pre-printed source serial number "734-8-90."

Distribution reports submitted by Berthold show that source serial number 734-8-90 was shipped to the Kuehne facility in Delaware City in 1991. There is no record of the NRC sending a General Licensee Registration for this serial number until after the corrections made in the registration dated July 9, 2001. The September 10, 2004, General License Registration for source serial number 734-8-90, submitted by Contact Person B, corrected the company name to "Kuehne Chemical Company, Inc." The October 6, 2005, General License Registration signed by Contact Person C, contained no changes. A letter dated September 14, 2006, from Contact Person D, informed the NRC of the transfer for disposal of a fixed gauge but did not list the source serial number. The

General License Registration dated September 15, 2006, from Contact Person C, corrected the information to indicate that source serial number 734-8-90 was transferred for disposal on December 7, 2005.

The NRC determined that only Contact Person A from Chloramone provided information to the NRC about source serial number 959-4-88. The information submitted by subsequent contact persons indicate they they were unaware that a fixed gauge containing source serial number 959-4-88 was present at the Delaware City facility. Subsequent contact persons corrected the General Licensee Registration in 2001 to indicate that the only source possessed was source serial number 734-8-90. General Licensee Registration continued to be completed for source serial number 734-8-90, and transfer and disposal information was provided for this source. There does not appear to be any Kuehne or NRC follow-up regarding source serial number 959-4-88 until it was found in the scrap yard in 2013.

c. Conclusions

No violations were identified relative to the records review.

4.0 Impacts to Members of the Public

a. Inspection Scope

The inspectors reviewed the report of scrap yard personnel activities, provided to PADEP staff by the consultant for the scrap metal company, and performed independent calculations to determine if doses to members of the public exceeded the NRC limits specified in 10 CFR 20.1301.

b. Observations and Findings

According to the 1990 survey record, source serial number 959-4-88 had an activity of 30 millicuries on April 1, 1988. NRC inspectors calculated the decay and determined the source activity to be 16.6 millicuries as of October 31, 2013. Using a gamma constant of 3.3 rad per hour per curie at 1 foot for cesium-137, the dose rate from an unshielded source of 16.6 millicuries is calculated to be 55 millirem per hour. At a distance of 3 feet from the source, the dose rate is calculated to be 6 millirem per hour. These dose rates could cause the dose to members of the public, in an unrestricted area, to exceed the limit of 2 millirem in any one hour as specified in 20.1301(a)(2).

According to a description of the efforts of scrap company personnel to find and secure the source, personnel spent about 2.5 hours searching for the source, and about 15-20 minutes to segregate and secure the source after it was found. The scrap yard personnel used a RadEye detector which recorded a total accumulated dose of 364 microrem, or 0.364 millirem, during this time. The inspectors calculated that, if scrap yard personnel spent 3 hours at a distance of 3 feet from the source, the total dose would calculate to 18 millirem. Based on the detector used, and the NRC calculations, members of the public did not receive any dose in excess of the NRC limit of 100 millirem total effective dose equivalent (TEDE) as specified in 10 CFR 20.1301(a)(1).

One individual was reported to carry the source in his hand for a period of about 15 minutes. The dose to the skin of the hand, calculated by NRC staff using the VARSKIN

computer code, was in the range of 5 to 20 rads. There are no effects expected to the skin in this dose range. If the hand holding the source was held at a distance of about 1 foot from the body, the dose to the whole body in 15 minutes would be about 14 millirem. There are no effects expected to an individual from this whole body dose.

The scrapyards' health physics consultant performed a leak test of the source and determined that it was not leaking. Therefore, contamination from the source was not a concern.

c. Conclusions

Dose rates in an unrestricted area could have exceeded the 10 CFR 20.1301(a)(2) limit of 2 millirem in any one hour. Doses to actual members of the public (scrap yard workers) did not exceed the 100 millirem limit specified in 10 CFR 20.1301(a)(1).

5.0 Exit Meeting

The NRC inspectors summarized the results of the site inspection prior to leaving the site on November 26, 2013. Following the site inspection, Kuehne staff contacted their waste disposal vendor and their scrap metal vendor but neither had any information related to the source. On December 16, 2013, the NRC inspectors and Kuehne staff discussed the results of the inspection by telephone.

PARTIAL LIST OF PERSONS CONTACTED

#*Jill Drazek, Environmental, Safety & Security Manager, Kuehne Company
#*Alan M. Rogers, Plant Manager, Kuehne Company

Pennsylvania Department of Environmental Protection

#Stephen Brown, Radiation Health Physicist, Radiation Protection Southeast Regional Office

NRC Staff

#*Farrah Gaskins, Health Physicist
#*Betsy Ullrich, Senior Health Physicist

in attendance at entrance meeting

* in attendance at exit meeting

INSPECTION PROCEDURE USED

IP 87103, "Inspection of Materials Licensees Involved in an Incident or Bankruptcy Filing"

LIST OF DOCUMENTS REVIEWED

NRC records of source serial number 959-4-88 including the following:

October 27, 1988, Berthold distribution report stating that the source was shipped to Chloramone on August 26, 1988, in a Berthold LB 7400 D Density Gauge, Chloramone Contact Person A

July 16, 1990, Survey of General Licensees stating that only one device was possessed under a general license by Chloramone Company, Division of Kuehne Chemical Company in Delaware City, a Berthold gauge Model LB 7400 D, with serial number 959-4-88

January 31, 1989, leak test report for LB 7400 D, serial number 959-4-88

July 9, 2001, General License Registration for Chloramone, with information related to this source serial number 959-4-88 pre-printed on the form. The form was corrected to list source serial number 734-8-90 in a Berthold LB 7440 gauge, and a receipt date of April 2, 1991.

September 10, 2004, General License Registration for Chloramone, listing one device in Delaware City, DE (source serial number 734-8-90) correcting the name to Kuehne Chemical Corporation, Inc.

October 6, 2005, General License Registration for Kuehne, listing one device in Delaware city (source serial number 734-8-90)

September 14, 2006, letter from Kuehne informing the NRC of the disposal of 1 Berthold gauge, Model LB 7440 D.

September 15, 2006, General License Registration for Kuehne in Delaware City, providing additional information that serial number 734-8-90 to be transferred for disposal.

Event Notification Report, Event Number 49513

“Recovery of Cesium 137 Sealed Source, Coatesville Scrap,” Health Physics Associates, Inc.