



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

April 7, 2016

Docket No. 03037848
EA-16-054

License No. 08-31338-01

Fadil M. Abdelfatah, P.E.
President
FMC & Associates, LLC
P.O. Box 70263
Washington, DC 20024

SUBJECT: NRC INSPECTION REPORT NO. 03037848/2015001 and NRC OFFICE OF INVESTIGATIONS (OI) CASE NO. 1-2015-13, FMC & ASSOCIATES, LLC, WASHINGTON, DISTRICT OF COLUMBIA

Dear Mr. Abdelfatah:

This letter refers to the inspection conducted on May 6, 2015, and February 25, 2016, at your Washington, D.C. facility and at temporary jobsites. The inspection examined activities conducted under your license as they relate to radiation safety and to compliance with the Commission's regulations and the conditions of your license. Within these areas, the inspection consisted of an examination of selected procedures and representative records, observations of activities, and interviews with yourself and FMC & Associates, LLC, (FMC) personnel. The enclosed report presents the results of this inspection. The inspector identified eight apparent violations of NRC regulations. The inspector discussed the preliminary inspection findings with you, Kaleab Desta, and Kimberly Ketchoyian of your staff at the conclusion of the on-site portion of the inspection on February 25, 2016. A final exit briefing was conducted (telephonically) with you, Kaleab Desta, and Kimberly Ketchoyian of your staff on March 28, 2016. The apparent violations, and the results of the NRC inspection are described in detail in Inspection Report No. 03037848/2015001, included as an enclosure to this letter.

Based on the results of the inspection, the NRC identified eight apparent violations of NRC requirements, one of which is being considered for escalated enforcement action in accordance with the NRC Enforcement Policy. The current Enforcement Policy is included on the NRC's Web site at

<http://www.nrc.gov/about-nrc/regulatory/enforcement/enforce-pol.html>.

The apparent violation being considered for escalated enforcement is documented in the enclosed report and involves the failure to use a minimum of two independent physical controls that form tangible barriers to secure portable gauges from unauthorized removal, whenever a portable gauge was not under the control and constant surveillance of the licensee (Section IV). The inspector identified that FMC had stored a portable gauge at a temporary jobsite without the use of two independent physical controls to prevent unauthorized access. This is an apparent violation of 10 CFR 30.34(i). We noted that when the inspector informed your staff of the apparent violation, corrective actions were taken to comply with NRC requirements. Specifically, FMC conducted training for authorized users regarding gauge security requirements and provided the necessary hardware to ensure compliant gauge security.

The remainder of apparent violations identified which are not being considered for escalated enforcement involve FMC's failure to: 1) comply with the terms and conditions of the license for confining its possession of byproduct material to the activity limits authorized in the license (Section III); 2) conduct physical inventories of its gauges every six months (Section II); 3) conduct a review of its radiation protection program content and implementation at least annually (Section II); 4) provide refresher training to its authorized gauge users annually (Section II); 5) review and maintain occupational radiation exposure records (Section II); 6) properly label and mark packages for transport (Section IV); and 7) adequately complete required shipping papers in accordance with NRC regulations (Section IV). The apparent violations, and the results of the NRC inspection, are described in detail in Inspection Report No. 03037848/2015001, included as an enclosure to this letter.

The circumstances surrounding these apparent violations, the significance of the issues, and the need for lasting and effective corrective actions were discussed with you and Kaleab Desta and Kimberly Ketchoyian, of your staff at the inspection exit meeting conducted via telephone on March 28, 2016. As a result, it may not be necessary to conduct a pre-decisional enforcement conference (PEC) in order to enable the NRC to make an enforcement decision.

In addition, since your facility has not been the subject of escalated enforcement actions within the last two inspections, and based on our understanding of your corrective action, a civil penalty may not be warranted in accordance with Section 2.3.4 of the Enforcement Policy. The final decision will be based on you confirming on the license docket that the corrective actions previously described to the NRC staff have been or are being taken.

We believe we have sufficient information to make an enforcement decision regarding the apparent violations. Therefore, you may accept the violations as characterized in this letter and notify us of that decision within **10** days. Alternatively, before the NRC makes its final enforcement decision, you may choose to provide your perspective on this matter, including the significance, cause, and corrective actions, as well as any other information that you believe the NRC should take into consideration by: (1) requesting a pre-decisional enforcement conference (PEC) to meet with the NRC and provide your views in person; (2) responding to the apparent violations in writing; or (3) accepting the violations as characterized in the letter and its enclosures (in which case the NRC will proceed with its enforcement decision). Please contact Monica Ford at (610) 337-5214 **within 10 days** of the date of this letter to notify NRC whether you are interested in attending a PEC, providing a written response, or accepting the violations.

If you choose to request a PEC, the meeting should be held in our office in King of Prussia, PA within 30 days of the date of this letter. The PEC will afford you the opportunity to provide your perspective on the apparent violations and any other information you believe the NRC should take into consideration before making an enforcement decision. The topics discussed during the conference may include the following: information to determine whether the violations have occurred, information to determine the significance of the violations, information related to the identification of the violations, and information related to any corrective actions taken or planned to be taken. The guidance in the excerpt from NRC Information Notice 96-28, "Suggested Guidance Relating to Development and Implementation of Corrective Action," may be helpful. The guidance is included on NRC's Web Site at <http://www.nrc.gov/reading-rm/basic-ref/enf-man/app-d.html>. If a PEC is held, it will be open for public observation and the NRC will issue a press release to announce the conference time and date.

If you choose, instead, to provide this information in a written response, it should be sent to the NRC within 30 days of the date of this letter. Your response may reference or include previously docketed correspondence. It should be clearly marked as a "Response to Apparent Violations in Inspection Report No. 03037848/2015001; EA-16-054," and sent to the U.S. Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington, DC 20555-0001 with a copy to the Regional Administrator, Region I, 2100 Renaissance Boulevard, King of Prussia, PA 19406.

In addition, please be advised that the number and characterization of apparent violations described in the enclosed inspection reports may change as a result of further NRC review. You will be advised by separate correspondence of the results of our deliberations on this matter.

Separately, the Region I Field Office, NRC Office of Investigations (OI), initiated an investigation (Case No. 1-2015-13) on May 6, 2015, to determine whether FMC had deliberately falsified records related to its licensed program. Based on the testimonial and documentary evidence obtained during the OI investigation, the NRC concluded that there were no willful acts by FMC employees regarding deliberate falsification of records. Please note that final NRC investigation documents, such as the OI report described above, may be made available to the public under the Freedom of Information Act (FOIA) subject to redaction of information appropriate under FOIA. Requests under the FOIA should be made in accordance with 10 CFR 9.23, "Requests for Records," which can be accessed at the NRC Web Site at <http://www.nrc.gov/reading-rm/doc-collections/cfr/part009/part009-0023.html>.

Current NRC regulations and guidance are included on the NRC's Web site at www.nrc.gov; select **Nuclear Materials; Med, Ind, & Academic Uses**; then **Regulations, Guidance and Communications**; 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).

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.

F. M. Abdelfatah

4

If you have any questions on this matter, please contact Scott Wilson at 610-337-5136.

Sincerely,

/RA/

James M. Trapp, Director
Division of Nuclear Materials Safety

Enclosure:
Inspection Report No. 03037848/2015001

cc w/Enclosure: Kaleab Desta, RSO
District of Columbia

F. M. Abdelfatah

4

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EXECUTIVE SUMMARY

FMC & Associates, LLC
NRC Inspection Report No. 03037848/2015001

FMC & Associates, LLC (FMC) is a consulting firm specializing in construction materials testing and inspection and geotechnical inspections. FMC's office location is in Washington, D.C. and much of their geotechnical work is performed there. This was a routine, unannounced inspection of licensed activities which involved inspections at the licensee's office on two occasions, May 6, 2015, and February 25, 2016. The license authorizes the use of byproduct material (cesium-137 and americium-241) in portable moisture-density gauges used for testing the physical properties of materials. Based on the results of this inspection, eight apparent violations of NRC requirements were identified.

One apparent violation is being considered for escalated enforcement action. The apparent violation involved FMC's failure to use a minimum of two independent physical controls that form tangible barriers to secure portable gauges from unauthorized removal, whenever a portable gauge was not under the control and constant surveillance of the licensee. The inspector identified that FMC had stored a portable gauge at temporary jobsites without the use of two independent physical controls to prevent unauthorized access.

This inspection also identified seven apparent violations that are not being considered for escalated enforcement. Those apparent violations were regarding FMC's failure to:

- 1) confine its possession of byproduct material to the activity limits authorized under its license;
- 2) conduct physical inventories of its gauges every six months;
- 3) conduct a review of its radiation protection program content and implementation at least annually;
- 4) provide refresher training to its authorized gauge users annually;
- 5) review and maintain occupational radiation exposure records;
- 6) properly label and mark packages for transport; and
- 7) adequately complete required shipping papers in accordance with NRC regulations.

The results of this inspection were discussed with the company president and the radiation safety officer during the initial inspection visit on May 6, 2015, and in a preliminary exit briefing on February 25, 2016. Immediate corrective actions were taken to resolve the issues of FMC's possession of a gauge not authorized by its NRC license, to address the shipping paper and package labeling requirements for the transport of gauges, and to address the storage of gauges at temporary jobsites without the use of two independent physical controls to prevent unauthorized access.

The company president stated to the inspector that the radiation safety officer had not adequately maintained the licensed program and that another individual had been appointed as radiation safety officer after the president was informed of the apparent violations by the inspector. The company president acknowledged that the ultimate responsibility for the license rested with him. An amendment to the license was requested to include the newly appointed radiation safety officer and the amended license was issued on September 8, 2015.

REPORT DETAILS

I. Organization and Scope of the Program

a. Inspection Scope

The inspector reviewed the organization and scope of the licensee's program, reviewed records, and held discussions with licensee personnel.

b. Observations and Findings

This was a routine unannounced inspection which involved inspections at the licensee's office on two occasions, May 6, 2015, and February 25, 2016.

FMC & Associates, LLC (FMC) is a consulting firm specializing in construction materials testing and geotechnical inspections. FMC's office was located in Washington, D.C. and much of their licensed activities was performed there. FMC was authorized by an NRC license to possess and use sealed sources of byproduct material in portable moisture-density gauging devices (gauges) at its office located at 515 M Street SE, Suite 106, Washington, D.C., and at temporary job sites in areas under U.S. Nuclear Regulatory Commission (NRC) jurisdiction. The gauges were used daily for moisture-density testing at various construction projects within Washington, D.C. and in the State of Maryland and Commonwealth of Virginia under reciprocity. FMC employed ten individuals involved in gauging operations. In addition to the ten direct employees, the licensee authorized several gauge users employed by other local engineering firms, including The Bakka Group, and Geo Design & Engineering, Inc., to perform licensed activities using FMC's gauges under its reciprocity licenses with the State of Maryland and the Commonwealth of Virginia. All authorized gauge users (AU's) were required to comply with the FMC gauge program requirements and NRC license conditions and regulations. The AU's reported directly to the Radiation Safety Officer (RSO). The RSO reported directly to FMC's President.

The license authorized the possession of Troxler Electronics Laboratories (Troxler) Model 3400 series gauging devices. The licensee possessed a total of eight gauges, seven Troxler Model 3400 series gauges and one Troxler Model 4640-B gauge. FMC's possession of the Troxler Model 4640-B gauge is discussed further in Section III of this report.

c. Conclusion

No violations were identified regarding the organization and scope of FMC's program.

II. Management Oversight of the Program

a. Inspection Scope

The inspector reviewed the management oversight of the program, conducted interviews with licensee management and gauge users, reviewed pertinent records, and observed licensed activities.

b. Observations and Findings

The inspector interviewed, in order of organizational hierarchy, the company president, radiation safety officer (RSO), assistant project manager, laboratory manager, and authorized gauge users. Through those interviews and a review of program records, the inspector determined that the RSO was responsible for oversight of the licensed gauge program; the assistant project manager had performed duties of program record maintenance; and the laboratory manager performed duties regarding gauge maintenance inspections and ensured the completed gauge utilization logs were replaced with new logs each month. The inspector determined that a clear delegation of the RSO responsibilities was not specifically established and oversight of the program was not fully compliant with the conditions of the license and NRC regulations, as evidenced by the licensee's failure to implement corrective actions resulting from the previous inspection and multiple apparent violations identified during this inspection. During the inspector's interview with the RSO, the RSO stated that he was not aware of the responsibilities of the position and was not familiar with the requirements of the NRC license conditions and regulations. The inspector noted that the RSO had successfully completed a radiation safety officer training course on January 13, 2010.

The inspector determined that between the dates of December 8, 2010, when the RSO was appointed, and April 16, 2014, the licensee did not:

- 1) conduct a physical inventory of its gauges every six months as required by Condition 15 of the license;
- 2) conduct annual radiation program reviews as required by 10 CFR 20.1101(c);
- 3) provide annual refresher training to all authorized gauge users as stated in the licensee's Radiation Safety Plan, a requirement of Condition 19 of the license; and,
- 4) during the months of August 2014, through January 2015, when employees of The Bakka Group and Geo Design & Engineering, Inc. conducted licensed activities under FMC's license using FMC's gauges, FMC did not review reports of personal occupational radiation exposure for those employee's or maintain occupational radiation exposure records for those individuals, as required by FMC's Radiation Safety Plan and Condition 19 of the license.

During interviews with the company president, the RSO, the assistant project engineer and the laboratory manager regarding the conduct of the licensee's physical inventories of gauges, occupational radiation exposure records, and training records, the inspector

determined that the individuals were not fully aware of their responsibilities for each of the required program elements. The RSO stated that the assistant project engineer and the laboratory manager conducted physical inventories of the gauges and maintained the training and exposure records; however, those individuals stated that they were not fully aware of their responsibilities or the regulatory basis for completing the tasks and maintaining the records. The RSO acknowledged that he was ultimately responsible for the oversight and management of the program; however, he stated that he was unaware of all of the requirements and did not ensure that all of the required program elements were completed and accurately documented. The RSO stated that his primary role at FMC was as a field technician and that the RSO responsibilities were an extra duty. When the inspector asked the RSO to approximate the amount of time he spent fulfilling the RSO duties during a typical week, he was unable to provide an estimate. The RSO stated that he had not done a very good job as RSO.

During a previous NRC inspection on October 18, 2010, two violations were identified regarding FMC's failure to: follow approved operating procedures as required by license condition; and to describe the hazardous material on a shipping paper, as required by 49 CFR 172.200. The inspection results were documented in the NRC letter to FMC dated November 18, 2010, (ML103260007¹). The letter documented commitments made by the company president, specifically, the corrective actions that had been taken and those that would be taken to address each violation. Specifically, the letter documents that the licensee committed to corrective actions including, in part, implementation of quarterly training for all authorized gauge users and initiation of quarterly unannounced temporary job site visits by the laboratory manager to verify that authorized users maintain gauges under constant surveillance at temporary job sites, operate the gauges in a safe manner, and possess appropriate shipping papers for all gauge transportation activities.

Through interviews with the radiation safety officer and a review of pertinent records, the inspector determined that, contrary to the above stated corrective actions, between November 18, 2010, and May 6, 2015, FMC had not implemented quarterly training for all authorized users and had not initiated unannounced temporary jobsite visits of authorized users. During an interview with the laboratory manager, he stated that he had not performed unannounced temporary jobsite visits for the purpose of determining compliance status, but that he had visited some jobsites as part of his normal duties and any observations made regarding gauge user activities at those sites were incidental in nature. The laboratory manager stated that he was unaware that unannounced jobsite visits were his responsibility. During an interview with the RSO, he stated that while he had visited a few temporary jobsites and observed gauge user activities, he had not done this with any regular frequency and that he had not documented his observations.

The inspector interviewed the company president who stated that the RSO was responsible for oversight of the program, and that the RSO was expected to maintain the program in accordance with the license conditions and regulations. The president also

¹ Designation in parentheses refers to an Agency-Wide Documents Access and Management System (ADAMS) Accession number. The document referenced is publicly available using the accession number in ADAMS.

stated that between August 2014, and January 2015, FMC had allowed several employees of two companies, The Bakka Group and Geo Design and Engineering, Inc., to use FMC's gauges at temporary jobsites located in Maryland and Virginia, under its license. The president stated that the companies were expected to comply with FMC's license requirements when using its gauges and that FMC would ensure compliance.

The company president stated that employees of the two companies wore personal monitoring devices (dosimetry) provided by their respective companies. The FMC RSO stated that he had not reviewed and maintained records of the individuals' occupational radiation exposure, as required by FMC's Radiation Safety Plan and Condition 19 of the license.

The inspector discussed the items above with the RSO and the company president during the onsite inspection on May 6, 2015, and again on February 25, 2016, during a follow up visit to the facility. The company president stated that the RSO was responsible for the management of FMC's licensed program, but the RSO's time and resources were limited and he had failed to manage the program effectively. The president also stated that the duties of the RSO had been transferred to another individual after the inspector discussed the apparent violations with him on May 6, 2015.

c. Conclusions

The inspector determined that management oversight of the program was not adequate to maintain compliance with the NRC license conditions and regulatory requirements. The inspector further determined that the corrective actions committed to by FMC's president regarding the violations noted during the previous inspection had not been fully implemented.

Four apparent violations of NRC requirements were identified as follows:

1. Condition 15 of NRC License 08-31338-01, Amendment No. 06, required, in part, that the licensee shall conduct a physical inventory every six months, or at other intervals approved by the U.S. Nuclear Regulatory Commission, to account for all sources and/or devices received and possessed under the license. Records of inventories shall be maintained for 5 years from the date of each inventory and shall include the radionuclides, quantities, manufacturer's name and model numbers, and the date of the inventory.

Contrary to the above, from December 8, 2010, to May 6, 2015, an interval greater than six months, the licensee did not perform a physical inventory to account for all sources and/or devices received and possessed under the license. Specifically, the RSO stated that he was not aware of the license condition and had not completed or documented physical inventories of the sealed sources.

2. 10 CFR 20.1101(c) required that the licensee shall periodically (at least annually) review the radiation protection program content and implementation.

Contrary to the above, between December 8, 2010, and May 6, 2015, an interval greater than annually, FMC & Associates, LLC, did not review the radiation protection program content and implementation.

3. Condition 19 of NRC License 08-31338-01, Amendment No. 06, required, in part, that the licensee shall conduct its program in accordance with the statements, representations, and procedures contained in the documents listed below. Included in the documents listed was the Application for NRC license dated July 21, 2008. The application included FMC's Radiation Safety Plan.

The Training section of FMC's Radiation Safety Plan requires, in part, that all training related to the control, use and transportation of portable nuclear gauges will comply with both the NRC and U.S. Department of Transportation (DOT) requirements summarized in the Radiation Safety Plan and that annual refresher training was required for all authorized users.

Contrary to the above, between February 28, 2013, and May 20, 2015, a period greater than one year, FMC & Associates, LLC did not provide annual refresher training to its authorized gauge users.

4. Condition 19 of NRC License 08-31338-01, Amendment No. 06, required, in part, that the licensee shall conduct its program in accordance with the statements, representations, and procedures contained in the documents listed below. Included in the documents listed is the Application for NRC license dated July 21, 2008. The application included FMC's Radiation Safety Plan.

The Personnel Monitoring Section of FMC's Radiation Safety Plan required, in part, that individual exposure records were to be properly reviewed by the RSO and that understandable files were to be permanently maintained.

Contrary to the above, between August 18, 2014, and May 6, 2015, FMC & Associates, LLC did not conduct its program in accordance with the statements, representations, and procedures contained in the documents listed in License Condition 19. Specifically, the licensee did not ensure that individual exposure records were reviewed by the RSO and that understandable files were permanently maintained.

Note: FMC appointed a new RSO and provided a letter to the NRC, dated July 20, 2015, requesting a license amendment reflecting the change of RSO. The amended license was issued on September 8, 2015.

III. Material Receipt, Use, Transfer, and Control

a. Inspection Scope

The inspector reviewed material receipt, use, transfer and control, conducted interviews with licensee management and gauge users, reviewed pertinent records, and observed licensed activities.

b. Observations and Findings

Through interviews with licensee management and a review of the NRC Docket, the inspector determined that the license had been amended several times since the previous inspection for the purpose of increasing the number of gauges allowed and the authorized possession limit. Each amendment request stated that the licensee requested to increase the possession limit as it planned to acquire additional "similar series" gauges. The inspector observed the gauges in storage and determined that one gauge was not authorized by the NRC license.

The license authorized the use of Troxler Electronics Laboratories (Troxler) Model No. 3400 series portable gauges; however, the licensee was in possession of seven Troxler Model 3400 series gauges and one Troxler Model 4640-B gauge. The inspector reviewed the Registry of Radioactive Sealed Sources Safety Evaluations (SS&D)* for the Troxler Model 3400 Series and Troxler Model 4640 & 4640-B gauges and determined that the Troxler Model 4640-B gauge was not included in the Model 3400 series authorized on the license.

The inspector determined that the Troxler Model 4640-B gauge was acquired by FMC in April of 2011, from North East Technical Services, Inc. (NETS) 75 Aileron Ct., Westminster, MD, State of Maryland Radioactive Materials License No. MD-13-020-1. The inspector noted that the Troxler Model 4640-B gauge was not authorized on the license and that the maximum sealed source activity for Cs-137 authorized on the license (81 millicuries) had been exceeded with the addition of the gauge. The president stated that the violation was an oversight, as the RSO did not review the FMC license and the sealed source activity specified in Item 8 of its license prior to acquiring the additional gauge. The president also stated that they had relied on NETS to ensure they were authorized to acquire the gauge under their license.

In response to the inspector's discussion with the company president regarding the apparent violation of exceeding the possession limit and possession of a gauge model not authorized on the license, FMC submitted a request to amend the license via letter dated August 31, 2015. The amended license was issued on September 8, 2015. The activity listed in Item 8 of the license was not increased during that amendment as FMC's possession of Cs-137 had decreased below the possession limit at that time. FMC had transferred two Troxler Model 3440 gauges to Geo Design & Engineering, Inc. on January 13, 2014. Geo Design & Engineering, Inc. was an engineering firm licensed by the Commonwealth of Virginia, License Number 107-329-2. FMC had verified the licensee was authorized to possess the gauges prior to transferring possession. Use of the gauges was as described on the license.

On August 31, 2015, the licensee submitted a letter requesting a license amendment. The amended license was issued on September 8, 2015.

*Troxler SS&D for Model 4640-B (No. NC-646-D-131-S)
Troxler SS&D for Model 3400 Series (No. NC-646-D-130-S)

c. Conclusions

One apparent violation of NRC requirements was identified as follows:

Item 8 of NRC License 08-31338-01, Amendment 06, specified that the maximum sealed source activity the licensee was authorized to possess at any one time under the license was 81 millicuries of cesium-137 (Cs-137).

Contrary to the above, from an undetermined date in April of 2011, to January 13, 2014, FMC & Associates, LLC, exceeded the maximum sealed source activity specified in Item 8 of its license. Specifically, the licensee took possession of one, 9 millicurie sealed source of Cs-137 in a Troxler Electronics Laboratories Model 4640-B portable density gauge in April of 2011, and the additional activity of the newly possessed source increased the licensee's possession of Cs-137 to approximately 90 millicuries, an amount which exceeded 81 millicuries, the amount authorized by Item 8 of FMC's license during that time period. This is an apparent violation of Item 8 of FMC & Associates, LLC's NRC license.

IV. Transportation

a. Inspection Scope

The inspector reviewed the licensee's program regarding transportation of licensed material, reviewed shipping papers, observed transportation activities in progress, and interviewed licensee personnel.

b. Observations and Findings

The inspector interviewed an authorized gauge user (AU) and observed the user prepare the gauge for transport to a temporary jobsite. The inspector determined that the FMC had not provided the AU training on FMC's Operating and Emergency Procedures and Radiation Safety Plan, but that the individual had been trained on the safe use and operation of gauges while employed by another licensee. The AU had completed a formal portable gauge safety training course and had experience using gauges at a previous employer.

Through direct observation, the inspector determined that the AU did not secure the package within the trunk of his vehicle to prevent shifting during transport, the AU did not secure the gauge with two independent physical controls that form tangible barriers to secure portable gauges from unauthorized removal, and that the AU stated that the gauge was not continuously under his control while stored in his vehicle. Observations conducted at two other temporary job sites showed that in those instances the AU's secured the portable gauges in compliance with the regulations.

The inspector discussed the security and transportation requirements with the AU and informed him that the requirements must be met prior to transporting or storing the gauge within his vehicle. The inspector also informed the RSO of the apparent violations and ensured that the requirements for transporting and securing a portable

gauge were fully understood by the AU and the RSO. The licensee took corrective actions prior to the AU transporting the gauge.

The inspector also reviewed the shipping papers the AU had in his possession and determined that the shipping papers were not in compliance with NRC's transportation regulations as they did not contain: 1) an emergency telephone number which was immediately available to any person responding to an incident involving the hazardous material; 2) the letters "RQ" were not listed in the description of the material, and a reportable quantity (RQ) of americium-241 were being prepared for shipment; 3) the isotopes and activity were not listed; and emergency procedures were not provided. The items were required by 10 CFR 71.5 and License Condition 18 of FMC's NRC license. The inspector observed licensed activities at two separate temporary job sites. The inspector's observations showed that in those instances the shipping papers were also missing the information noted above.

The inspector discussed the results of the above observations with the RSO and determined that the RSO was not fully aware of the transportation requirements. The inspector provided the RSO with acceptable methods of meeting the shipping requirements and the RSO corrected all of the items identified above prior to any additional shipments being made. The RSO stated that he would ensure all authorized gauge users were provided with additional training prior to them conducting any additional gauge shipments.

The RSO stated that, in accordance with company procedures, all authorized users were required to secure the gauges in their vehicles with chains and/or cables and locks to prevent shifting during transport and for security purposes to meet the requirements of 10 CFR 30.34(i).

As an immediate corrective action the RSO ensured the authorized user was provided the training and equipment necessary for compliant transport and security of gauges prior to transporting the gauge.

c. Conclusions

Three apparent violations of NRC requirements were identified as follows:

1. 10 CFR 30.34(i) required, in part, that each portable gauge licensee shall use a minimum of two independent physical controls that form tangible barriers to secure portable gauges from unauthorized removal, whenever portable gauges are not under the control and constant surveillance of the licensee.

Contrary to the above, on approximately 12 occasions between November 1, 2014, and May 6, 2015, FMC & Associates, LLC, did not use a minimum of two independent physical controls that form tangible barriers to secure portable gauges from unauthorized removal, and the portable gauges were not under the control and constant surveillance of the licensee. Specifically, an authorized gauge user had conducted licensed activities at temporary job sites and stored a portable gauge in the trunk of a personal vehicle when it was not under the control and constant surveillance of the individual at all times,

and the gauge was secured with only one tangible barrier (locked vehicle trunk) to prevent unauthorized removal.

2. 10 CFR 71.5 required, in part, that each licensee who transports licensed material outside the site of usage, as specified in the NRC license, shall comply with the applicable requirements of the DOT regulations in 49 CFR parts 171 through 180, appropriate to the mode of transport.

49 CFR 172.403(a) required, in part, that unless excepted from labeling by 49 CFR 173.421 through 173.427 of this subchapter, each package of radioactive material must be labeled as provided in this section.

49 CFR 172.403(g) required, in part, that the following applicable items of information must be entered in the blank spaces on the RADIOACTIVE label by legible printing (manual or mechanical), using a durable weather resistant means of marking: (1) the names of the radionuclides; and (2) the maximum activity of the radioactive contents in the package.

Contrary to the above, on May 6, 2015, FMC & Associates, LLC, transported licensed material outside the site of usage, as specified in the NRC license, and did not comply with the applicable requirements of the Department of Transportation (DOT) regulations in 49 CFR parts 171 through 180, appropriate to the mode of transport. Specifically, the licensee transported a portable moisture-density gauge containing sealed sources of Cs-137 (9 millicuries) and Am-241 (44 millicuries), a reportable quantity**, from its office location listed on the NRC license to temporary job sites in Washington, D.C., and the package was not marked with the names of the radionuclides, and the maximum activity of the radioactive contents in the package.

3. 49 CFR 172.203(d), required, in part, that the description for a shipment of a Class 7 (radioactive) material must include the following additional entries as appropriate: the name of each radionuclide and the maximum activity of the radioactive contents contained in each package during transport.

49 CFR 172.600(c), required, in part, that no person to whom this subpart applies may offer for transportation, accept for transportation, transfer, store or otherwise handle during transportation a hazardous material unless (1) emergency response information conforming to this subpart is immediately available for use at all times the hazardous material is present; and (2) emergency response information, including the emergency response telephone number, required by this subpart is immediately available to any person who, as a representative of a Federal, State or local government agency, responds to an incident involving a hazardous material, or is conducting an investigation which involves a hazardous material.

Contrary to the above, on May 6, 2015, FMC & Associates, LLC, transported licensed material outside the site of usage, as specified in the NRC license, and did not comply with the applicable requirements of the DOT regulations in 49 CFR parts 171 through 180, appropriate to the mode of transport. Specifically, the licensee transported a portable moisture-density gauge containing sealed sources of Cs-137 (9 millicuries) and

Am-241 (44 millicuries) a reportable quantity, on public highways via passenger vehicles, from its office location listed on the NRC license to temporary job sites in Washington, D.C., and the shipping papers did not contain the required emergency response telephone number, the name of each radionuclide, and the maximum activity of the radioactive contents contained in each package.

** Note: The RQ value for Am-241 is 10 millicuries.

V. Exit Meeting

A preliminary site exit briefing was conducted on February 25, 2016. On March 28, 2016, a final telephonic exit meeting was conducted with the company president and the current RSO. Licensee representatives acknowledged the inspector's findings. No proprietary information was identified.

PARTIAL LIST OF PERSONS CONTACTED

Licensee

Fadil Abdelfatah, P.E., President #*^
Oscar Vasquez, RSO (appointed 2010 – 2015) #*
Kaleab Desta, RSO (appointed September 8, 2015) *^
Kimberly Ketchoyian, Assistant Project Manager #*^
Sentayehu Akalu, Laboratory Manager
Idrissa Kamara, Technician
Soloman Tafesse, Technician

#Present at entrance meeting

*present at preliminary exit meeting

^Present during telephone exit meeting

INSPECTION PROCEDURES USED

Inspection Procedure (IP) 87124, "Fixed and Portable Gauge Programs," Focus Elements 1 – 7;
and
Inspection Procedure 86730 "Transportation of Radioactive Materials," Focus Elements 1 – 7.

ITEMS OPEN, CLOSED, AND DISCUSSED

The following apparent violations were identified:

1. Failure to use a minimum of two independent physical controls to secure portable gauges from unauthorized removal, a violation of 10 CFR 30.34(i). (Section IV)
2. Failure to comply with the terms and conditions of the license for confining its possession of byproduct material to the activity limits authorized in the license. (Section III)
3. Failure to comply with the terms and conditions of the license for conducting a physical inventory of licensed material every six months, a violation of License Condition 15. (Section II)
4. Failure to review the radiation protection program content and implementation at least annually, a violation of 10 CFR 20.1101. (Section II)
5. Failure to comply with the terms and conditions of the license for providing annual refresher training to its authorized gauge users. (Section II)
6. Failure to comply with the terms and conditions of the license for ensuring that individual exposure records were properly reviewed and maintained. (Section II)
7. Failure to comply with the terms and conditions of the license for transporting licensed material, regarding marking and labeling a package, a violation of 10 CFR 71.5.
This is a repeat violation. (Section IV)

8. Failure to comply with Department of Transportation regulations for transporting licensed material, regarding shipping papers, a violation of 49 CFR 172.203(d), and 49 CFR 172.600(c). (Section IV)

LIST OF DOCUMENTS REVIEWED

The following program records dated 2010 – 2015, were provided by FMC:

FMC and Associates, LLC, Radiation Safety Plan
Inventory records
Sealed source leak test results
Daily Utilization Logs
Transportation shipping records
Authorized user training content and test results

LIST OF ACRONYMS AND ABBREVIATIONS USED

FMC - FMC and Associates, LLC
RSO – Radiation Safety Officer
President – President of FMC and Associates, LLC
Gauge – Portable Moisture-Density Gauge
DOT – US Department of Transportation
AU – Authorized gauge user
RQ – Reportable Quantity