November 18, 2010

Surendra K. Gupta, Ph.D., President
American Radiolabeled Chemicals
101 ARC Drive
St. Louis, MO 63146

SUBJECT: NRC REACTIVE INSPECTION REPORT NO. 030-20567/10-02 (DNMS) AND NOTICE OF VIOLATION – AMERICAN RADIOLABELED CHEMICALS, INC.

Dear Dr. Gupta,

On October 19, 2010, the U.S. Nuclear Regulatory Commission (NRC) completed its review of an Unresolved Item identified during an NRC reactive inspection at the American Radiolabeled Chemicals, St. Louis, Missouri, site, which concluded on January 21, 2010 (NRC Inspection Report No. 030-20567/09-02(DNMS) dated February 18, 2010). The Unresolved Item pertained to contamination identified in outdoor areas of the site and modification of building exhaust systems, and was documented in the aforementioned inspection report. During the exit meeting held on October 19, 2010, the inspector informed your Radiation Safety Officer of the results of the NRC's evaluation and closure of the Unresolved Item.

Based on the results of our evaluation of the Unresolved Item, the NRC has determined that two Severity Level IV violations of NRC requirements occurred. The violations were evaluated in accordance with the NRC Enforcement Policy. The current Enforcement Policy is included on the NRC's website at http://www.nrc.gov/about-nrc/regulatory/enforcement/enforcement-pol.html. The violations involved the failure to: (1) conduct adequate surveys to demonstrate compliance with public dose annual limits; and (2) evaluate the effects of liquid effluent discharges.

The violations are cited in the enclosed Notice of Violation (Notice) and the circumstances surrounding them are described in detail in the subject inspection report. The violations are being cited in the Notice because they were identified by the inspectors.

You are required to respond to this letter and should follow the instructions specified in the enclosed Notice when preparing your response. The guidance in NRC Information Notice 96-28, "Suggested Guidance Relating to Development and Implementation of Corrective Action," may be helpful. You can find the information notice on the NRC website at: http://www.nrc.gov/reading-rm/doc-collections/gen-comm/info-notices/ 1996/in96028.html. The NRC will use your response, in part, to determine whether further enforcement action is necessary to ensure compliance with regulatory requirements.

In accordance with Title 10 of the Code of Federal Regulations (10 CFR) 2.390 of the NRC's "Rules of Practice," a copy of this letter, its enclosures, and your response, will be made available electronically for public inspection in the NRC Public Document Room or from the NRC's Agencywide Documents Access and Management System (ADAMS), accessible from the NRC Web site 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.

Sincerely,

/RA/

Tamara E. Bloomer, Chief
Materials Inspection Branch

Docket No. 030-20567
License No. 24-21362-01

Enclosure:
1. Notice of Violation
2. Inspection Report No. 030-20567/10-02(DNMS)

cc w/encl: Regis Greenwood, Radiation Safety Officer
State of Missouri

response should not include any personal privacy, Proprietary, or safeguards information so that it can be made available to the Public without redaction.

Sincerely,

/RA/

Tamara E. Bloomer, Chief
Materials Inspection Branch

Docket No. 030-20567
License No. 24-21362-01

Enclosure:
1. Notice of Violation
2. Inspection Report No. 030-20567/10-002(DNMS)

cc w/encl: Regis Greenwood, Radiation Safety Officer
State of Missouri

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NOTICE OF VIOLATION

American Radiolabeled Chemicals Inc.
St. Louis, Missouri

Docket No. 030-20567
License No. 24-21362-01

During a U.S. Nuclear Regulation Commission (NRC) inspection conducted from October 20, 2009, through January 21, 2010, the NRC identified an Unresolved Item pertaining to the extent of contamination identified by the NRC in outdoor areas and the modification of the building exhaust systems. During review of the Unresolved Item that was completed on October 19, 2010, violations of NRC requirements were identified. In accordance with the Enforcement Policy, the violations are listed below:

A. Title 10 of the Code of Federal Regulations (10 CFR) 20.1501 (a) requires that each licensee make or cause to be made, surveys that may be necessary for the licensee to comply with the regulations in Part 20 and that are reasonable under the circumstances to evaluate the extent of radiation levels, concentrations or quantities of radioactive materials, and the potential radiological hazards that could be present. Title 10 CFR 20.1501 (b) requires that the licensee shall ensure that instruments and equipment used for quantitative radiation measurements (e.g. dose rate and effluent monitoring) are calibrated periodically for the radiation measured.

Title 10 CFR 20.1003, *survey* means an evaluation of the radiological conditions and potential hazards incident to the production, use, transfer, release, disposal, or presence of radioactive material or other sources of radiation. Title 10 CFR 20.1301 requires the licensee to conduct operations so that the total effective dose equivalent to individual members of the public from the licensed operation does not exceed 0.1 rem (1 milli Sievert [mSv]) in a year.

Contrary to the above, as of October 19, 2010, the licensee failed to:

1. Make surveys to assure compliance with 10 CFR 20.1301 that are reasonable under the circumstances to evaluate concentrations of radioactive material in air effluents. Specifically, during 11 of the 17 sampling periods in calendar year 2009, the licensee failed to make or cause to be made, surveys adequate to demonstrate compliance with public dose limits of 0.1 rem/yr to a member of the public provided in 10 CFR 20.1301.

2. Ensure that instruments and equipment used for quantitative effluent monitoring radiation measurements are calibrated. Specifically, as of October 19, 2010, the licensee had failed to calibrate the system's instruments and equipment that are used in the air effluent monitoring system to determine the volume of air passed through the system to demonstrate compliance with the public dose limit of 0.1 rem per year to a member of the public provided in 10 CFR 20.1301.

This is a Severity Level IV violation (Supplement 6.7).

Title 10 CFR 20.1302 (a) requires the licensee to make or cause to be made, as appropriate, surveys of radiation levels in unrestricted and controlled areas and radioactive material in effluents released to unrestricted and controlled areas to

demonstrate compliance with the annual public dose limit in 10 CFR 20.1301.

Title 10 CFR 20.1003, *survey* means an evaluation of the radiological conditions and potential hazards incident to the production, use, transfer, release, disposal, or presence of radioactive material or other sources of radiation.

Title 10 CFR 20.1301 requires the licensee to conduct operations so that the total effective dose equivalent to individual members of the public from the licensed operation does not exceed 0.1 rem (1 mSv) in a year.

Contrary to the above, as of November 4, 2009, the licensee did not make surveys to assure compliance with 10 CFR 20.1301, which limits radiation exposure to members of the public to 0.1 rem. Specifically, on October 22, 2009, the licensee had not conducted an evaluation or survey of the liquid effluent from the restricted roof of Building 100 via downspouts. Following the licensee's identification of contamination on the roof and soil, the licensee failed to perform adequate surveys to identify the extent of contamination, levels of the on-going liquid effluent release, and the potential hazards associated with the radioactive material to ensure compliance with 10 CFR 20.1301.

This is a Severity Level IV violation (Supplement 6.7).

Pursuant to the provisions of 10 CFR 2.201, American Radiolabeled Chemicals is hereby required to submit a written statement or explanation to the U.S. Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington, DC 20555-0001, with a copy to the Regional Administrator, Region III, within 30 days of the date of the letter transmitting this Notice of Violation (Notice). This reply should be clearly marked as a "Reply to a Notice of Violation" and should include for each violation: (1) the reason for the violation, or, if contested, the basis for disputing the violation or severity level; (2) the corrective steps that have been taken and the results achieved; (3) the corrective steps that will be taken to avoid further violations; and (4) the date when full compliance will be achieved. Your response may reference or include previous docketed correspondence, if the correspondence adequately addresses the required response. If an adequate reply is not received within the time specified in this Notice, an Order or a Demand for Information may be issued as to why the license should not be modified, suspended, or revoked, or why such other action as may be proper should not be taken. Where good cause is shown, consideration will be given to extending the response time. If you contest this enforcement action, you should also provide a copy of your response, with the basis for your denial, to the Director, Office of Enforcement, United States Nuclear Regulatory Commission, Washington, DC 20555-0001.

In accordance with 10 CFR 2.390 of the NRC's "Rules of Practice," a copy of this letter and your response will be available electronically for public inspection in the NRC Public Document Room or from the NRC's Agencywide Documents Access and Management System (ADAMS), accessible from the NRC Web site 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. If personal privacy or proprietary information is necessary to provide an acceptable response, then please provide a bracketed copy of your response that identifies the information that should be protected and a

redacted copy of your response that deletes such information. If you request withholding of such material, you must specifically identify the portions of your response that you seek to have withheld and provide in detail the bases for your claim of withholding (e.g., explain why the disclosure of information will create an unwarranted invasion of personal privacy or provide the information required by 10 CFR 2.390(b) to support a request for withholding confidential commercial or financial information).

In accordance with 10 CFR 19.11, you may be required to post this Notice within two working days.

Dated this 18th day of November 2010.

U.S. NUCLEAR REGULATORY COMMISSION

REGION III

Docket No:	030-20567
License No:	24-21362-01
Report No:	030-20567/10-02 (DNMS)
Licensee:	American Radiolabeled Chemicals, Inc.
Facility:	101 ARC Drive St. Louis, Missouri
Inspection Dates:	October 20 through 22, 2009 November 4 through 5, 2009 In-office review through October 19, 2010
Preliminary Exit Meeting:	January 21, 2010
Final Exit Meeting:	October 19, 2010
Inspectors:	Mike McCann, Senior Health Physicist Katie Streit, Health Physicist
Approved By:	Tamara E. Bloomer, Chief Materials Inspection Branch Division of Nuclear Materials Safety

EXECUTIVE SUMMARY

American Radiolabeled Chemicals
Inspection Report No. 030-20567/10-02(DNMS)

On October 20-22 and November 4-5, 2009, the U.S. Nuclear Regulatory Commission (NRC) conducted a reactive inspection at American Radiolabeled Chemicals' (the licensee) St. Louis, Missouri facility, with a continued in-office review through January 21, 2010. The purpose of the inspection was to evaluate activities relating to characterization of soils in outdoor areas of the facility and to determine if the activities were conducted safely and in accordance with NRC requirements. The results of the inspection were described in NRC Inspection Report No. 030-20567/09-02(DNMS) dated February 18, 2010. The review of buildings 100, 200 and 300 exhaust systems' modifications and the extent of outdoor contamination identified by the NRC was an Unresolved Inspection Item (URI) pending the completion of further review.

On October 19, 2010, the NRC completed its review of the URI pertaining to the extent of contamination identified by the NRC and modification of the facility's exhaust system. Through review of the URI, the inspectors identified one violation for failure to survey or evaluate the liquid effluent being released through downspouts from the roof of Buildings 100 and 200.

The licensee stated that an immediate corrective action to prevent a similar violation included collection of the liquid discharge that is released from the downspouts off Buildings' 100, 200, and 300 roofs. The liquid discharges would then be sampled and released through approved liquid discharge procedures.

In support of the URI review, and concurrent with the licensee's license renewal, the NRC hired an independent contractor, the Center for Nuclear Regulatory Analyses (CNWRA) at Southwest Research Institute, to support the evaluation of the licensee's air effluent system. During the course of this review, inspectors were informed of new information pertaining to the airborne effluent monitoring system. Through review of new information regarding the airborne effluent monitoring system, inspectors identified two examples of a violation involving the failure to conduct adequate surveys to demonstrate compliance with the public dose requirement of Title 10 of the Code of Federal Regulations(10 CFR) 20.1301, including; (a) failure to conduct adequate air effluent monitoring surveys; and (b) failure to conduct calibration of instruments and equipment associated with the air effluent monitoring system.

Report Details[1]

1.0 Program Overview

Licensed Activities and Inspection History

The U.S. Nuclear Regulatory Commission (NRC) License No. 24-21362-01 authorizes American Radiolabeled Chemicals (the licensee) to manufacture and synthesize radiolabeled chemicals for distribution to authorized persons. The majority of the licensee's radioactive material was hydrogen-3 and carbon-14. The licensee's radiolabeled chemical synthesis activities involved use of high specific activity hydrogen-3 and carbon-14 labeled organic chemicals and are conducted in the licensee Buildings 100, 200 and 300. Building 400 is the nearest publically occupied building to the licensee operational facilities and is located to the north of Building 300 and northeast of Buildings 100 and 200.

The NRC completed a reactive inspection on January 21, 2010, to evaluate the licensee's activities relating to characterization of soils in outdoor areas of the site and to determine if licensed activities involving facility soil were conducted safely and in accordance with NRC requirements. As a result, the NRC issued a Notice of Violation citing four violations involving: (1) failure to identify and evaluate the associated hazards of known contamination in outdoor areas of the the licensee site; (2) failure to require the use of protective clothing in a contaminated area; (3) failure to ensure the adequate survey of an individual's hands after performing decontamination work in one of the production buildings; and (4) conducting activities outside the authorized use described in the license. Details of the inspection are provided in Inspection Report No. 030-20567/09-02.

An unresolved item pertaining to the extent of contamination identified by the NRC in outdoor areas and the modification of the building exhaust systems was also identified during the reactive inspection. Due to the complexity of this issue, the NRC treated this item as unresolved inspection item (URI) 030-20567/09-02-01 pending the completion of further review. This report provides the results of the URI closure.

In support of the URI review, and concurrent with the licensee's license renewal application evaluation, the NRC hired an independent contractor, the Center for Nuclear Regulatory Analyses (CNWRA) at Southwest Research Institute, to support the evaluation of the licensee's air effluent monitoring system. During the course of this review, inspectors identified new information pertaining to the airborne effluent monitoring system. This report provides the results of the licensee's ability to measure and quantify airborne effluent releases.

2.0 Airborne Effluent Monitoring System

2.1 Inspection Scope

The inspectors evaluated the licensee's air effluent monitoring system used to ensure compliance with the public dose limit and ALARA (as low as reasonably achievable)

[1] NOTE: A list of acronyms used in the report is included at the end of the report.

constraint provided in 10 CFR 20.1301 and 10 CFR 20.1101(d), respectively. The inspectors observed the licensee during collection of an air effluent sample. The NRC used an independent contractor, the CNWRA to support the NRC evaluation of the licensee's air effluent monitoring system and public dose calculations.

The NRC inspectors and CNWRA staff evaluated the licensee's use of Building 400 rooftop as a representative location for monitoring air effluents from its production buildings to demonstrate compliance with the public dose limit and ALARA constraint. The NRC inspectors reviewed the CNWRA's evaluation of the wind rose data for consistency with wind rose data for a nearby airport, Lambert St. Louis International Airport, from 1961 to 1990; Gaussian dispersion data and equations; and potential building wake effects.

2.2 Observations and Findings

The licensee laboratories exhaust carbon-14 and hydrogen-3 in an airborne effluent as a result of its chemical synthesis activities. To ensure compliance with the 0.1 rem (100 mrem) public dose limit of 10 CFR 20.1301 and the 10 mrem air effluent constraint limit of 10 CFR 20.1101(d), the licensee monitors carbon-14 and hydrogen-3 concentrations in air entering the nearest building to the licensee's laboratories occupied by the public, building 400, through four air effluent monitoring systems. The licensee's four air effluent monitoring systems continuously pulls air through a series of two vials to measure effluent concentration at each of the four sample points. The licensee samples the vials on a periodic frequency to determine the average airborne effluent concentration entering Building 400 during the sampling period.

The licensee's staff adequately collects samples from the monitoring system on a periodic frequency to determine average carbon-14 and hydrogen-3 concentration in air. The licensee determines the activity in the sample through a calibrated liquid scintillation system. After the activity is determined, the licensee utilizes a spreadsheet to calculate the carbon-14 and hydrogen-3 concentration present in the air which passed through the system. Input parameters needed by the spreadsheet include activity of carbon-14 and hydrogen-3, time of the sampling period, and the volume of air that passed through the system. The licensee adequately records the beginning and ending time of the sampling period to determine the length of time of the monitoring period. The licensee reads the flow rate of the monitoring system from a rotameter at the beginning and end of the monitoring period. The flow rates are averaged to determine the volume of air passed through the system during the monitoring period.

The inspectors identified that the rotameters used to determine the systems' flow rate have not been calibrated. The licensee stated that the rotameters were not calibrated but were replaced when they begin to stick due to the pass through of the vial's solution. Additionally, the air flow pump was not calibrated to ensure constant flow through the effluent monitoring system.

Title 10 CFR 20.1501(b) requires licensees to ensure that instruments and equipment used for quantitative radiation measurements, such as effluent monitoring, are calibrated periodically for the radiation measured. Since the air effluent monitoring systems in Building 400 provides quantitative radiation measurements to determine compliance with public dose limit of 10 CFR 20.1302 and ALARA limit of 10 CFR 20.1101(d), the

licensee's failure to calibrate the air sampling system's equipment and instruments is a violation of 10 CFR 20.1501(b).

To determine system's collection efficiency, the licensee uses the ratio of activity present in the second vile to activity in the first vial. The licensee's utilizes an adequate collection efficiency equation when the second vial contains less activity than the first. However, during 7 of the 17 sampling periods in calendar year 2009, hydrogen-3 activity was found to be higher in at least one of the monitoring systems' second vial. Additionally, during 11 of the 17 sampling periods carbon-14 activity was found to be higher in at least one of the monitoring systems' second vial. When the second vial was determined to contain a larger activity, ratios cannot be used to determine the system's collection efficiency. Instead, the licensee determined the average airborne effluent concentration from the sum of the activity of the two vials without knowing the system efficiency. Since concentration of the two vials was determined by the sum of the activity of the vials, any material which passed through the second vial would be unaccounted for. Unaccounted material would result in an underestimation of the dose. The licensee had not conducted an evaluation to determine if material passed through the monitoring system.

Title 10 CFR 20.1501 (a) requires that each license make or cause to be made, surveys that may be necessary for the licensee to comply with the regulations in Part 20, and that are reasonable under the circumstances to evaluate the extent of radiation levels, concentrations or quantities of radioactive materials, and the potential radiological hazards that could be present. Title 10 CFR 20.1003, *survey* means an evaluation of the radiological conditions and potential hazards incident to the production, use, transfer, release, disposal, or presence of radioactive material or other sources of radiation. Title 10 CFR 20.1301 requires the licensee to conduct operations so that the total effective dose equivalent to individual members of the public from the licensed operation does not exceed 0.1 rem (1 mSv) in a year. The practice of summing the activity of the two vials to determine concentration of radionuclides in the air effluent, without a known system collection efficiency, is an inadequate survey and is a violation of 10 CFR 20.1501(a).

The licensee's corrective action is to submit a license amendment request to the NRC to modify its air effluent monitoring system to ensure adequate surveys and calibrations will be conducted to demonstrate compliance with annual average public dose limits and constraints provided in 10 CFR Part 20. The licensee committed to submit an evaluation or modification to the air effluent monitoring system no later than their required license expiration date of October 31, 2011.

Once the air sampling system activity is converted to average airborne hydrogen-3 and carbon-14 concentrations, the licensee utilizes appropriate conversion factors derived from air effluent concentration provided in 10 CFR 20, Appendix B, to convert the airborne concentration to dose, appropriately. More information regarding the adequacy of the licensee's calculations to convert from air concentration to public dose is provided in Inspection Report 030-20567/10-03.

The licensee's wind rose data indicate western and southern winds dominate and was found to be consistent with data from Lambert St. Louis International Airport. Since Building 400 is located north of the stack for Building 300, the wind rose data suggests Building 400 is appropriate for measuring emissions from Building 300. However, since

Building 400 is located northeast of the stack for Building 100/200 stack, Building 400 may not be the optimum position for monitoring air effluent from Building 100/200 stack.

The licensee's Gaussian Dispersion calculation provided the highest dose rate to be approximately 4 mrem per year at a distance between 25 and 75 meters, without the use of occupancy factors. However, Building 400 measured dose has been found to be higher than the licensee's proposed Gaussian calculated values, between 3.5 to 28.5 mrem per year, when not utilizing building occupancy factors. Since the licensee's effective stack height is less than two and a half times the buildings heights, it is likely the difference is due to building wake effects. However, since the licensee utilizes measurement of air effluent concentrations rather than use of Gaussian calculations to demonstrate compliance with public dose limits, no violation has been identified in regard to the provided Gaussian calculations.

The wind rose information and the possibility for building wake effect on Building 400 are being further evaluated. The licensee and the NRC staff continue to evaluate whether other publically accessible areas or buildings would be more appropriate for measurement of air effluents to demonstrate compliance with public dose requirements through a licensing action.

2.3 Conclusions

The inspectors identified two violations of 10 CFR 20.1501, involving the licensee's failure to conduct an adequate survey to determine annual average public dose to members of the public in Building 400 and failure to calibrate equipment used in monitoring air effluents.

The licensee and the NRC staff continue to evaluate the airborne effluent monitoring system and optimum locations for air effluent measurements to continue to demonstrate compliance with public dose requirements through a licensing actions.

3.0 Liquid Effluent Monitoring

3.1 Inspection Scope

The inspectors interviewed the RSO and staff to evaluate the licensee's liquid effluent monitoring program. The NRC inspectors performed direct radiological survey measurements in the soil beneath downspouts of the licensee's Buildings 100 and 200, collected two liquid samples from Buildings 100 and 200 roof liquid run off, and a biased soil sample under the southwest building 200 drainpipe. The samples were sent to the NRC's contract laboratory, Oak Ridge Institute for Science and Education (ORISE), for carbon-14 and hydrogen-3 analysis.

3.2 Observations and Findings

During an October 20, 2009, inspection (NRC Inspection Report No. 030-20567/09-02(DNMS) dated February 18, 2010), NRC inspectors identified contamination in the soil beneath the downspouts of the licensee's Buildings 100 and 200. The inspectors noted that the licensee had not performed surveys in these outdoor areas, such that residual radioactivity discharged from the drainage of rain run-off from the building's downspouts into the ground would have been identified. After

being informed of the contamination by the inspectors, the licensee placed barrels under the downspouts of Buildings 100, 200 and 300 to collect drain water run-off.

The Regulatory Issue Summary 2008-03 states that radioactive material properly released in gaseous or liquid effluents may be returned to the environment from a licensee facility without being considered a new radioactive material effluent release if the licensee has already accounted for this radioactive material when the effluent was originally released and the subsequent release does not introduce a new significant dose pathway to a member of the public. As of October 19, 2010, the licensee had not performed evaluation to account for the radioactive material contained in the liquid effluents that were being discharged from the Building's roofs. The licensee's Building 400 air monitoring system is the only system the licensee utilizes to ensure compliance with NRC public dose limits of 10 CFR 20.1301. Since the material being discharged in the liquid effluent does not reach the Building 400 air monitoring effluent system, the liquid effluent has not been evaluated for public dose.

On November 5, 2010, the NRC inspectors collected two water samples from the barrels and sent these samples to ORISE for analysis. The results from the samples were: 1.70E-4 and 2.38E-3 microcuries per milliliter (µCi/mL) of hydrogen-3 and 1.66E-6 and 8.43E-6 µCi/mL of carbon-14. The NRC annual average liquid effluent release to the unrestricted area boundary values are specified in 10 CFR Part 20, Table B. The values for hydrogen-3 and carbon-14 are 1E-3 µCi/mL and 3E-5 µCi/mL, respectively. Using the sum of fraction, the higher NRC sample results were 2.66 times the values specified in Table B using sum of fractions. As of January 21, 2010, the licensee had not conducted an evaluation of the liquid effluent concentration being released from the laboratory roofs and effluents and to ensure no new dose pathway was introduced due to the release of this material.

The NRC inspectors also collected a biased soil sample beneath Building 200 southwest drain spout where previous drained liquid had created an eroded path to a creek, which is on the south side of the licensee's property. The results for the biased soil sample were reported as 1,390 and 978 picocurie per gram (pCi/g) for hydrogen-3 and carbon-14, respectively. The NRC unrestricted use concentrations for surface soils are specified in NUREG-1757, Table B.2 "Interim Screening Values of Common Radionuclides for Soil Surface Contamination Levels." The screening values for hydrogen-3 are 110 pCi/g and carbon-14 for 12 pCi/g.

Title 10 CFR 20.1302 requires that a licensee make or cause to be made surveys of radioactive materials in effluents released to unrestricted and controlled areas to demonstrate compliance with the dose limits for individual members of the public in 10 CFR 20.1301. 10 CFR 20.1301 limit for total effective dose equivalent to individual members of the public from licensed operations is 100 mrem in a year from licensed operations. The licensee's failure to evaluate or survey the liquid effluent released from its laboratories' roofs or to demonstrate no new significant public dose pathway was introduced by the liquid effluent constitutes a violation of 10 CFR 20.1302.

The licensee immediate corrective action to prevent a similar violation included the collection of liquid effluents released from the roofs of Buildings 100, 200, and 300. The collected liquid is then sampled and released if the radiological concentration is found to be below 10 CFR 20 appendix B, table 2 values. If the radiological concentration is

found to be above 10 CFR 20, appendix B, table 2 values, the licensee will release the liquid through its NRC approved liquid discharge procedures.

3.3 Conclusions

The inspectors identified one violation of 10 CFR Part 20 for licensee's failure to evaluate or survey the liquid effluent released from facility buildings' roofs to the outdoor unrestricted area.

4.0 Exit Meeting Summary

At the completion of the inspectors' review of the URI regarding the licensee's method of determining members of the public annual dose from effluent, an inspector discussed the inspection findings in this report with the RSO during a telephone exit meeting on October 19, 2010. The licensee did not identify any documents or processes reviewed by the inspectors as proprietary.

ATTACHMENT: SUPPLEMENTAL INFORMATION

SUPPLEMENTAL INFORMATION

PARTIAL LIST OF PERSONS CONTACTED

Regis Greenwood, Radiation Safety Officer, American Radiolabeled Chemicals
Jim Durham, Southwest Research Institute, Center for Nuclear Waste Regulatory Analyses

ITEMS OPENED, CLOSED, AND DISCUSSED

Opened	None
Closed	URI-030-20567/09-02-01 (DNMS)
Discussed	None

LIST OF ACRONYMS USED

ADAMS	Agencywide Documents Access and Management System
ALARA	As low as reasonably achievable
ARC	American Radiolabeled Chemicals
CFR	Code of Federal Regulations
CNWRA	Center for Nuclear Regulatory Analyses
dpm/100cm^2	Disintegrations per minute per 100 centimeters squared
IP	Inspection Procedure
MREM	Millirem
NRC	U.S. Nuclear Regulatory Commission
µCi/mL	microCurie per milliliter
ORISE	Oak Ridge Institute for Science and Education
pCi/g	picoCurie per gram
RSO	Radiation Safety Officer
URI	Unresolved Inspection Item