

RI - DNMS Licensee Event Report Disposition

Licensee:	Turkey Hill				
Event Description:	Tritium Contamination				
License No:	General	Docket No:	-	MLER-RI:	2008-005
Event Date:	12/13/07	Report Date:	01/16/08	HQ Ops Event #:	

1. REPORTING REQUIREMENT

<input type="checkbox"/> 10 CFR 20.1906 Package Contamination <input type="checkbox"/> 10 CFR 20.2201 Theft or Loss <input type="checkbox"/> 10 CFR 20.2203 30 Day Report <input checked="" type="checkbox"/> Other <u>Part 30</u>	<input checked="" type="checkbox"/> 10 CFR 30.50 Report <input type="checkbox"/> 10 CFR 35.3045 Medical Event <input type="checkbox"/> License Condition
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NMed 070764

2. REGION I RESPONSE

<input type="checkbox"/> Immediate Site Inspection <input checked="" type="checkbox"/> Special Inspection <input type="checkbox"/> Telephone Inquiry <input type="checkbox"/> Preliminary Notification/Report <input checked="" type="checkbox"/> Information Entered in RI Log <input type="checkbox"/> Report Referred To: _____	<table style="width: 100%;"> <tr> <td style="width: 80%;">Inspector/Date</td> <td style="width: 20%; text-align: center;">M. Reichard / 2/08</td> </tr> <tr> <td>Inspector/Date</td> <td></td> </tr> <tr> <td>Inspector/Date</td> <td></td> </tr> <tr> <td><input type="checkbox"/> Daily Report</td> <td></td> </tr> <tr> <td><input type="checkbox"/> Review at Next Inspection</td> <td></td> </tr> </table>	Inspector/Date	M. Reichard / 2/08	Inspector/Date		Inspector/Date		<input type="checkbox"/> Daily Report		<input type="checkbox"/> Review at Next Inspection	
Inspector/Date	M. Reichard / 2/08										
Inspector/Date											
Inspector/Date											
<input type="checkbox"/> Daily Report											
<input type="checkbox"/> Review at Next Inspection											

3. REPORT EVALUATION

<input checked="" type="checkbox"/> Description of Event <input checked="" type="checkbox"/> Levels of RAM Involved <input type="checkbox"/> Cause of Event	<input checked="" type="checkbox"/> Corrective Actions <input checked="" type="checkbox"/> Calculations Adequate <input type="checkbox"/> Additional Information Requested from Licensee
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4. MANAGEMENT DIRECTIVE 8.3 EVALUATION

<input type="checkbox"/> Release w/Exposure > Limits <input type="checkbox"/> Repeated Inadequate Control <input type="checkbox"/> Exposure 5x Limits <input type="checkbox"/> Potential Fatality <input type="checkbox"/> If any of the above are involved: <input type="checkbox"/> Considered Need for IIT Decision/Made By/Date: _____	<input type="checkbox"/> Deliberate Misuse w/Exposure > Limits <input type="checkbox"/> Pkgng Failure > 10 rads/hr or Contamination > 1000x Limits <input type="checkbox"/> Large# Indivs w/Exp > Limits or Medical Deterministic Effects <input type="checkbox"/> Unique Circumstances or Safeguards Concerns <input type="checkbox"/> Considered Need for AIT
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5. MANAGEMENT DIRECTIVE 8.10 EVALUATION (additional evaluation for medical events only)

<input type="checkbox"/> Timeliness - Inspection Meets Requirements (5 days for overdose / 10 days for underdose) <input type="checkbox"/> Medical Consultant Used-Name of Consultant/Date of Report: _____ <input type="checkbox"/> Medical Consultant Determined Event Directly Contributed to Fatality <input type="checkbox"/> Device Failure with Possible Adverse Generic Implications <input type="checkbox"/> HQ or Contractor Support Required to Evaluate Consequences
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6. SPECIAL INSTRUCTIONS OR COMMENTS

Review event and licensee's plan for disposal of other gauges

<input type="checkbox"/> Non-Public <input checked="" type="checkbox"/> Public-SUNSI REVIEW COMPLETE non-sens.	Inspector Signature: <u>M. Reichard</u> Branch Chief Initials: <u>MM</u>	Date: <u>2/5/08</u> Date: <u>2/5/08</u>
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January 16, 2008

Mr. James Dwyer
U.S. Nuclear Regulatory Commission
475 Allendale Road
King of Prussia, PA 19406

Re: Turkey Hill Dairy, Conestoga, PA
Tritium Contamination Project Report

Dear Mr. Dwyer:

As per your recent conversation with Jeff Groff, Health and Safety Coordinator at Turkey Hill Dairy, please find enclosed the above referenced report prepared by Clym Environmental Services, LLC on behalf of Turkey Hill and in accordance with NRC reporting requirements contained in 10 CFR Part 30.

Turkey Hill is confident that we have fulfilled the notification and reporting requirements outlined in Section 30.50 of the applicable NRC regulations. We appreciate your review of this report and look forward to hearing from you regarding its content and conclusion.

If you have any questions or require additional information, please feel free to contact either Jeff Groff or me at 717-872-5461.

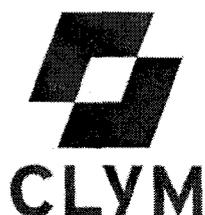
Sincerely,

A handwritten signature in black ink that reads "William P. Gregory". The signature is written in a cursive, flowing style.

William P. Gregory
Facilities and Maintenance and Engineering Manager

Cc: Jeff Groff, Turkey Hill Dairy
Charles Watts, Clym Environmental Services

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2008 JAN 18 AM 11:08



Project Report

TO:	Jeff Groff	DATE:	January 14, 2008
FROM:	Charles Watts	ID:	71213CW, 7 Pages
SUBJECT:	Tritium Contamination Survey		

1.0 Background

Clym Environmental Services, LLC (Clym) was contacted by Clean Venture/Cycle Chem, Inc. (CVCC) to investigate a potentially damaged exit sign containing tritium at Turkey Hill Dairy's (Turkey Hill) facility in Conestoga, PA on December 13, 2007. CVCC provides hazardous and non-hazardous waste management and support services to Turkey Hill. Turkey Hill Dairy possesses a number of tritium exit signs under a general license from the Nuclear Regulatory Commission (NRC). Upon inspection of a group of exit signs that were still in original packaging and appeared to have never been installed, one sign was damaged. The damage consisted of missing tubes and apparently broken tubes.

The signs had been discovered in a parts storage area some weeks before and had been set-aside for a Safety Department representative to remove. The signs were collected and moved to a secure storage area elsewhere in the building. Turkey Hill Safety representatives interviewed individuals in the parts department and found that no one had any details relevant to the signs, including their history at the facility, storage time or the events related to the damaging of any exit signs.

The signs, parts room and storage area were surveyed for removable radioactive contamination. A total of sixty-five (65) samples were collected on high-risk surfaces, e.g. floors, storage cabinets, etc. Samples were collected using dry paper wipes over an approximate surface area of one hundred square centimeters (100cm²) while applying moderate pressure. Samples were stored in individual glassine envelopes so as to prevent cross-contamination. The samples were recorded on a chain of custody for transfer to Clym's radio analytical laboratory in Frederick, MD (State of Maryland Radioactive Materials License Number MD-21-035-01, expiring 11/31/2012).

The damaged sign along with the packing material was contained in double poly liners and tightly sealed. The outer liner was marked with "Caution Radioactive Material" tape and the storage room was secured from unauthorized access pending the sample analysis results. The samples were removed to Clym's lab and were analyzed using liquid scintillation counting techniques. Results of this initial survey are included as Attachment One.

This initial survey revealed detectable radioactive contamination on the damaged sign, the outer cardboard packaging of the other signs that were stored in association with the damaged sign and on one area of the storage room floor. The survey confirmed that the damaged sign had indeed leaked some of its radioactive material.

These results were communicated to Turkey Hill along with the recommendation that the NRC be notified of the event and that a more extensive survey be undertaken. Turkey Hill reported the incident and the initial survey findings to the NRC Operations Center on December 17, 2007.

2.0 Regulatory Reference

Nuclear Regulatory Commission requirements located in Title 10 of the Code of Federal Regulations (CFR), Part 30, Section 30.50 require notification to the NRC Operations Center by the general licensee within twenty-four hours after discovery of events involving radioactive material including, "An unplanned contamination event that: Requires access to the contaminated area, by workers or the general public, to be restricted for more than 24 hours by imposing additional radiological controls or by prohibiting entry into the area..." (10CFR30.55(b)(1)(i)).

Though only small amounts of radioactive contamination were detected during the initial survey ($<30,000$ dpm/100cm²), contamination had spread to the floor of the storage area. This finding coupled with the confirmation that the exit sign had indeed leaked radioactivity, warranted a more extensive survey, restriction of access to the storage room and therefore notification of the NRC Operations Center.

10 CFR 30.50(c)(2) provides requirements for written reports for such incidents: "Each licensee who makes a report required by paragraph (a) or (b) of this section shall submit a written follow-up report within 30 days of the initial report. Written reports prepared pursuant to other regulations may be submitted to fulfill this requirement if the reports contain all of the necessary information and the appropriate distribution is made. These written reports must be sent to the NRC using an appropriate method listed in Sec. 30.6(a); and a copy must be sent to

the appropriate NRC Regional office listed in appendix D to part 20 of this chapter. The reports must include the following:

- (i) A description of the event, including the probable cause and the manufacturer and model number (if applicable) of any equipment that failed or malfunctioned;
- (ii) The exact location of the event;
- (iii) The isotopes, quantities, and chemical and physical form of the licensed material involved;
- (iv) Date and time of the event;
- (v) Corrective actions taken or planned and the results of any evaluations or assessments; and
- (vi) The extent of exposure of individuals to radiation or to radioactive materials without identification of individuals by name."

3.0 Reporting Requirements

3.1 Description of the Event

The circumstances specific to the sign being damaged are unknown. What is known is that the signs were identified during a parts room reorganization effort and the signs were recognized as those containing radioactivity. The signs were set-aside for removal and management by the Safety Department.

The damaged sign was manufactured by the Safety Light Corporation of Bloomsburg, PA. The sign's serial number is 024171 and its date of manufacture is listed as 9/1996. The original maximum amount of tritium (^3H) contained in the sign is listed as 11.5 Curies. The model number could not be confirmed but the sign is similar in appearance and construction to model number SLX60.

The sign includes a number of parts. One part is a thin plastic-like holder with the letters (EXIT) impressed into the plastic. Tubes containing the tritium are glued into these impressions in the shape of each letter. In addition there are two impressions for arrows "<" and ">" at the beginning and end of the word EXIT which serve as directional indicators of available exits. The sign appeared to have contained a total of twelve (12) tubes. Of these twelve (12), three (3) or four (4) appear to be missing and at least one (1) of the tubes was found to be broken. Parts of a broken tube remain with the sign. There was no evidence of the missing tubes.

The probable cause of the incident is likely an event associated with the storage or movement of the sign. The cardboard box in which the sign is stored is not securely sealed. The sign could have been dropped causing

the damage or could have fallen from the box while being moved. Additionally, other items could have been stored on top of the sign that may have caused the damage. It is not believed that the damage was a result of equipment failure or malfunction, however this cannot be definitively determined.

3.2 Location of the Event

Turkey Hill Dairy is located at 2601 River Road, Conestoga, PA 17516. The exact location of where the sign was originally damaged is unknown. What is known is that the sign had been stored in the Parts Room East of the Main Building. From there it was moved to the Safety Storage Room of the Main Building. At some point the sign leaked radioactivity onto the original packaging and onto one small area of the floor in the Safety Storage Room where it had recently been moved. It is believed that the sign had been stored in the Parts Room East for a significant period of time.

The area where the sign had been reportedly stored, the Part Room East and the associated Clerk's Office were surveyed and no significant radioactive contamination was identified.

3.3 Contaminant Information

The only detailed information regarding the contaminant was found on the damaged sign. A manufacturer's label revealed that the sign contained hydrogen-3 (or tritium). The activity was listed as a maximum of 11.5 Curies (Ci). Though no markings were found indicating physical or chemical form, self-luminous exit signs are commonly manufactured using hydrogen gas.

3.4 Date and Time of the Event

The timing of the original event is unknown. The initial contamination survey was conducted on December 13, 2007. Results of this survey were provided to Turkey Hill via electronic mail on December 14, 2007.

3.5 Corrective Actions and Assessment Results

On January 2, 2008 representatives from Turkey Hill and Clym met to discuss proposed follow-up actions. It was decided that the area of contamination identified on the floor of the Safety Storage Room would be cleaned; the damaged sign and associated packaging would be packaged for subsequent disposal as low-level radioactive waste; that further

surveys would be conducted to determine the presence or lack thereof of any additional removable radioactive contamination; and that an inventory effort aimed at identifying all exit signs containing tritium would be conducted. With the exception of a comprehensive inventory, these actions were completed immediately so as to have available data to include in the required reporting to the NRC.

The damaged sign and associated packing materials that had been previously placed into double liners, was secured in a four-mil poly liner and sealed with a 30-gallon steel drum. The drum was tightly secured and labeled with "Caution Radioactive Material" tape. The drum remains stored within the Safety Storage Room. The outside of the drum and the area used for packing were surveyed after the drum had been sealed.

The concrete floor of the storage room was found to have 1,735 dpm/100 cm² on one sample collected during the initial survey. This area was thoroughly cleaned using wipes containing ethyl alcohol. The wipe sample locations were mapped and the ethyl alcohol wipes collected and saved. The area was resurveyed after decontamination activities.

A more extensive survey was undertaken in the Safety Storage Room, Parts Room East, Parts Room Clerk's Office and the hallways between the Safety Storage Room and the Parts Room East. In the Safety Storage Room forty-eight (48) wipes were collected on the floor, doorknob, telephone, as well as the shelves and cabinets where the exit signs may have been placed. Additional samples were collected on each sign that had been stored with the damaged sign. In the Parts Room East, thirty-four (34) samples were collected on the floor, doors, desks and other work surfaces. In the Parts Room Clerk's Office, fifteen (15) samples were collected on the floor, doors and desks. In the hallway leading from the Parts Room East to the Safety Storage Room thirteen (13) samples were collected. In the hallway leading from the Safety Storage Room to a main exit of the building, thirty-one (31) samples were collected. Samples were also collected on the floor scrubber used to periodically clean hallways. All of these samples were collected using dry paper wipes over an approximate 100cm² surface area while applying moderate pressure. Samples were listed on a chain of custody and returned to Clym for radioanalysis using liquid scintillation counting techniques. Results of these surveys are included as Attachment Two.

An aggressive action limit for removable radioactivity of 100dpm/100cm² was established. Any sample found above this limit would require additional surveying and/or decontamination. Three (3) samples exceeded the action limit. Each of these samples were collected on exit

signs that were stored near the damaged sign. All other wipes samples were below the action limit.

On January 8, 2008 a Clym representative returned to Turkey Hill and decontaminated each sign determined to exceed the action limit with wipes containing ethyl alcohol. Each of these signs as well as the papers that were stored in the same cabinet drawer were contained in a four-mil liner. The liner was sealed and marked with "Caution Radioactive Material" tape. The metal cabinet drawer was also cleaned using ethyl alcohol wipes. After decontamination and packaging activities, another survey was conducted in the Safety Storage Room. These samples were also collected using dry paper wipes over an approximate 100cm² surface area while applying moderate pressure. Samples were listed on a chain of custody and returned to Clym for radioanalysis using liquid scintillation counting techniques. Results of this survey are included as Attachment Three.

As of January 8, 2008 all items contaminated in excess of the action limit were secured and packaged. All surfaces that were surveyed were found to be below the action limit.

In addition to these actions, Turkey Hill representatives conducted an inspection of the Parts Room East and other storage areas in an attempt to locate the missing tubes. The tubes were not located during this effort. Also, Turkey Hill representatives began an inspection of the facility to identify and map all tritium-containing exit signs in the facility. This effort is ongoing as of the date of this report.

3.6 Extent of Exposure of Individuals to Radiation or to Radioactive Materials

Given that the details of the initial event are unknown, and not likely to be known, exposure of individuals to radiation or radioactive materials cannot be defensibly quantified. The actions taken since the exit signs were identified in the Parts Room East can be addressed. Only one of the tubes in the damaged sign is known to have broken, which means that only a portion of the maximum amount of radioactivity in the sign could have leaked. The remains of this tube showed the highest level of removable radioactive contamination (28,932 dpm/100cm²) detected during all surveys that were taken.

The NRC provides guidance for the release of facilities from radiological controls if residual radioactivity can be determined to result in an exposure to affected individuals of less than 25 mrem/year. The screening level for

such decommissioning surveys designed to detect removable tritium is $1.2E+08\text{dpm}/100\text{cm}^2$ (NUREG 1757-Volume 1, Appendix B, Table B.1). Thus the results of the surveys taken reveal removable radioactivity well below facility release guidelines.

4.0 Continuing Activities

Activities that have yet to be completed include (1) the shipment of the damaged sign and packing materials for disposal as low-level radioactive waste (LLRW) and (2) the inventory and documentation of all exit signs containing tritium on site.

The waste will be profiled for processing and disposal. Once approval is gained the waste will be shipped for disposal at a fully licensed and insured LLRW disposal site. Turkey Hill will enlist Clym's assistance in the shipment of this waste. Shipment is tentatively planned for late February 2008.

The inventory of exit signs containing tritium is intended to give Turkey Hill better control over the installation, disposal and storage of these signs so as to prevent a recurrence of this event. Responsibility for the management of these signs will be transferred to the Safety Department. Turkey Hill has made a management decision to phase out the use of self-luminous signs containing tritium. The inventory of the exit signs should be completed by mid-February 2008. These exits signs are targeted for recycling or disposal by the end of 2008.

5.0 Conclusion

Based on the assessments described in this summary report, the radioactive contamination associated with a damaged tritium exit sign has been contained. Though the details of the original event which damaged the sign are unknown, the plausible means and locations for contaminant migration have been identified and surveyed. All items or areas exhibiting removable radioactive contamination in excess of established action levels have either been designated for disposal or decontaminated.

Turkey Hill has identified the need for better control of these exit signs and has instituted a plan for the management and ultimate removal of these signs from service. With the addition of this control method, the likelihood of a recurrence of such an event has been significantly reduced. It is recommended that this summary be included in the written report provided to the NRC and that any subsequent recommendations from the NRC be followed.

Attachment One

WIPE SAMPLE RESULTS, 12/13/07

**Survey Data Reduction
Spreadsheet**

		Liquid Scintillation Counter Results (71213-1)						
Sample ID Item Number	Sample Location	Background (cpm)	Beta/Gamma CPM	Efficiency (3H)	Time (m)	MDA	DPM/100cm ²	Uncertainty (95%CL)
Hallway by SSR	Floor	28	0.5	0.5513	4	23.7	0.9	6.65
Safety Storage Rm	Door knob (outer)	28	0	0.5497	4	23.7	0.0	6.64
Safety Storage Rm	Door knob (inner)	28	3.75	0.5552	4	23.5	6.8	6.79
Safety Storage Rm	Floor	28	6.75	0.5293	4	24.7	12.8	7.30
Safety Storage Rm	Floor	28	0	0.5498	4	23.7	0.0	6.64
Safety Storage Rm	Floor	28	5	0.5101	4	25.6	9.8	7.46
Safety Storage Rm	Floor	28	2	0.5394	4	24.2	3.7	6.88
Safety Storage Rm	Floor	28	4	0.5088	4	25.7	7.9	7.42
Safety Storage Rm	Floor	28	11.25	45.7	4	0.3	0.2	0.09
Safety Storage Rm	Floor	28	2.75	0.5102	4	25.6	5.4	7.32
Safety Storage Rm	Floor	28	878	0.5059	4	25.8	1735.5	29.45
Safety Storage Rm	Floor	28	4.75	0.5334	4	24.5	8.9	7.12
Safety Storage Rm	Floor	28	0	0.5395	4	24.2	0.0	6.76
Safety Storage Rm	Floor	28	1.5	0.5436	4	24.0	2.8	6.80
Safety Storage Rm	Floor	28	0.5	0.4921	4	26.5	1.0	7.45
Safety Storage Rm	Floor	28	0.25	0.5517	4	23.7	0.5	6.63
Safety Storage Rm	Floor	28	3.25	0.5453	4	23.9	6.0	6.88
Safety Storage Rm	Floor	28	0	0.5492	4	23.8	0.0	6.64
Safety Storage Rm	Floor	28	0	0.5591	4	23.3	0.0	6.52
Safety Storage Rm	Floor	28	0.75	0.5104	4	25.6	1.5	7.20
Lateral File #1	Drawer 1	28	8.75	0.5474	4	23.8	16.0	7.17
Lateral File #1	Drawer 2	28	2.25	0.5357	4	24.4	4.2	6.95
Lateral File #1	Drawer 3	28	3.5	0.5381	4	24.3	6.5	6.99
Lateral File #1	Drawer 4	28	1.25	0.5546	4	23.5	2.3	6.65
Lateral File #1	Drawer 5	28	0	0.5271	4	24.8	0.0	6.92
Lateral File #2	Drawer 1	28	2	0.5506	4	23.7	3.6	6.74
Lateral File #2	Drawer 2	28	3.25	0.5308	4	24.6	6.1	7.07
Lateral File #2	Drawer 3	28	4.5	0.5445	4	24.0	8.3	6.96
Lateral File #2	Drawer 4	28	0.5	0.5531	4	23.6	0.9	6.63
Lateral File #2	Drawer 5	28	0	0.5451	4	23.9	0.0	6.69
Sign 592380	Exit sign	28	0	0.5372	4	24.3	0.0	6.79
Sign 592379	Exit sign	28	2	0.556	4	23.5	3.6	6.68
Sign 592376	Exit sign	28	0	0.5513	4	23.7	0.0	6.62
Sign 029810	Exit sign	28	0	0.5246	4	24.9	0.0	6.95

**Survey Data Reduction
Spreadsheet**

		Liquid Scintillation Counter Results (71213-1)						
Sample ID Item Number	Sample Location	Background (cpm)	Beta/Gamma CPM	Efficiency (3H)	Time (m)	MDA	DPM/100cm ²	Uncertainty (95%CL)
Sign (SN Unknown)	Exit sign	28	54	0.541	4	24.1	99.8	9.45
Sign 024172	Exit sign	28	75.75	0.5156	4	25.3	146.9	10.85
Sign 592383	Exit sign	28	72.5	0.5511	4	23.7	131.6	10.03
Sign 216646	Exit sign	28	10	0.5283	4	24.7	18.9	7.50
Damaged sign	Exit sign	28	201.25	0.522	4	25.0	385.5	14.98
Damaged sign	Exit sign	28	619.5	0.5592	4	23.3	1107.8	22.66
Damaged sign	Exit sign	28	1361	0.5518	4	23.7	2466.5	33.26
Damaged sign	Exit sign	28	15461.5	0.5344	4	24.4	28932.4	113.64
Damaged sign	Exit sign	28	11403	0.5306	4	24.6	21490.8	98.35
Drawer 5	Papers	28	27.75	0.5326	4	24.5	52.1	8.38
Drawer 5	Papers	28	21.25	0.5174	4	25.2	41.1	8.28
Drawer 5	Papers	28	7	0.5471	4	23.9	12.8	7.07
Parts Room East	Cabinet 1 Top	28	7.75	0.5225	4	25.0	14.8	7.45
Parts Room East	Cabinet 1 Top	28	4.25	0.5175	4	25.2	8.2	7.31
Parts Room East	Cabinet 1 Top	28	2.5	0.5179	4	25.2	4.8	7.20
Parts Room East	Cabinet 1 Top	28	0	0.5494	4	23.8	0.0	6.64
Parts Room East	Cabinet 1 Top	28	1.25	0.5244	4	24.9	2.4	7.03
Parts Room East	Cabinet 1 Inside	28	5.25	0.5423	4	24.1	9.7	7.04
Parts Room East	Cabinet 1 Inside	28	2.75	0.5274	4	24.7	5.2	7.08
Parts Room East	Cabinet 1 Inside	28	6.5	0.5381	4	24.3	12.1	7.16
Parts Room East	Cabinet 1 Inside	28	5.75	0.5319	4	24.5	10.8	7.20
Parts Room East	Cabinet 1 Inside	28	7.25	0.5495	4	23.8	13.2	7.06
Moved item 1	Boxes	28	6.25	0.5365	4	24.3	11.6	7.17
Moved item 2	Fuses	28	5.5	0.5325	4	24.5	10.3	7.18
Parts Room East	Cabinet 1A Inside	28	5.75	0.5488	4	23.8	10.5	6.98
Parts Room East	Cabinet 1A Inside	28	3.5	0.5312	4	24.6	6.6	7.08
Parts Room East	Cabinet 1A Inside	28	0.5	0.5189	4	25.2	1.0	7.06
Parts Room East	Cabinet 1A Inside	28	2	0.5367	4	24.3	3.7	6.92
Parts Room East	Cabinet 1A Inside	28	3.5	0.5486	4	23.8	6.4	6.85
Parts Room East	Cabinet 1A Inside	28	1.75	0.5528	4	23.6	3.2	6.70
Parts Room East	Cabinet 1A Inside	28	0.25	0.5474	4	23.8	0.5	6.68

Attachment Two

WIPE SAMPLE RESULTS, 1/2/2008

**Survey Data Reduction
Spreadsheet**

		Liquid Scintillation Counter Results (80103-1)						
Sample ID Item Number	Sample Location	Background (cpm)	Beta/Gamma CPM	Efficiency (3H)	Time (m)	MDA	DPM/100cm ²	Uncertainty (95%CL)
Safety Storage Rm	Floor	28	0	0.5155	4	25.3	0.0	7.08
Safety Storage Rm	Floor	28	5.5	0.5441	4	24.0	10.1	7.03
Safety Storage Rm	Floor	28	0	0.5221	4	25.0	0.0	6.99
Safety Storage Rm	Floor	28	0.5	0.5549	4	23.5	0.9	6.60
Safety Storage Rm	Floor	28	0.5	0.548	4	23.8	0.9	6.69
Safety Storage Rm	Floor	28	4.25	0.5432	4	24.0	7.8	6.97
Safety Storage Rm	Floor	28	2	0.512	4	25.5	3.9	7.25
Safety Storage Rm	Floor	28	0	0.5374	4	24.3	0.0	6.79
Safety Storage Rm	Floor	28	1.5	0.5372	4	24.3	2.8	6.88
Safety Storage Rm	Floor	28	0	0.5072	4	25.7	0.0	7.19
Safety Storage Rm	Floor	28	1.5	0.5389	4	24.2	2.8	6.86
Safety Storage Rm	Floor	28	2.25	0.5305	4	24.6	4.2	7.01
Safety Storage Rm	Floor	28	2.5	0.5183	4	25.2	4.8	7.19
Safety Storage Rm	Floor	28	9	0.5514	4	23.7	16.3	7.13
Safety Storage Rm	Floor	28	0	0.4966	4	26.3	0.0	7.35
Safety Storage Rm	Floor	28	3	0.4911	4	26.6	6.1	7.62
Safety Storage Rm	Floor	28	0	0.5171	4	25.2	0.0	7.05
Safety Storage Rm	Floor	28	6.75	0.5367	4	24.3	12.6	7.20
Safety Storage Rm	Floor	28	0	0.5166	4	25.3	0.0	7.06
Safety Storage Rm	Floor	28	0	0.5036	4	25.9	0.0	7.24
Safety Storage Rm	Floor	28	3	0.483	4	27.0	6.2	7.75
Safety Storage Rm	Floor	28	0	0.5122	4	25.5	0.0	7.12
Safety Storage Rm	Floor	28	30.5	0.5391	4	24.2	56.6	8.41
Safety Storage Rm	Floor	28	38	0.5063	4	25.8	75.1	9.34
Safety Storage Rm	Floor	28	6	0.5186	4	25.2	11.6	7.40
Safety Storage Rm	Floor	28	0.5	0.5152	4	25.3	1.0	7.11
Safety Storage Rm	Floor	28	1.75	0.4997	4	26.1	3.5	7.41
Safety Storage Rm	Floor	28	3.5	0.4997	4	26.1	7.0	7.53
Safety Storage Rm	Floor	28	1	0.504	4	25.9	2.0	7.30
Safety Storage Rm	Floor	28	0.5	0.5324	4	24.5	0.9	6.88
Safety Storage Rm	Floor	28	2.75	0.5007	4	26.1	5.5	7.46
Safety Storage Rm	Floor	28	0	0.4995	4	26.1	0.0	7.30
Safety Storage Rm	Floor	28	1.5	0.4977	4	26.2	3.0	7.43

**Survey Data Reduction
Spreadsheet**

		Liquid Scintillation Counter Results (80103-1)						
Sample ID Item Number	Sample Location	Background (cpm)	Beta/Gamma CPM	Efficiency (3H)	Time (m)	MDA	DPM/100cm ²	Uncertainty (95%CL)
Safety Storage Rm	Floor	28	2	0.4733	4	27.6	4.2	7.84
Safety Storage Rm	Floor	28	54	0.541	4	24.1	99.8	9.45
Safety Storage Rm	Floor, post packing	28	3.75	0.5434	4	24.0	6.9	6.93
Safety Storage Rm	Floor, post packing	28	5	0.5536	4	23.6	9.0	6.88
Safety Storage Rm	Floor, post packing	28	0	0.5311	4	24.6	0.0	6.87
Safety Storage Rm	Floor, post packing	28	0.25	0.5621	4	23.2	0.4	6.50
Safety Storage Rm	Floor, post packing	28	2	0.5581	4	23.4	3.6	6.65
Safety Storage Rm	Sealed drum	28	2.75	0.5427	4	24.1	5.1	6.89
Safety Storage Rm	Cabinet 1 Top	28	1.5	0.5224	4	25.0	2.9	7.08
Safety Storage Rm	Cabinet 1 Top	28	37	0.5165	4	25.3	71.6	9.10
Safety Storage Rm	Cabinet 1 Boxes	28	2.75	0.5239	4	24.9	5.2	7.13
Safety Storage Rm	Shelf by phone	28	0.75	0.5249	4	24.9	1.4	7.00
Safety Storage Rm	Shelf by phone	28	0.75	0.5224	4	25.0	1.4	7.03
Safety Storage Rm	Shelf by phone	28	3.5	0.544	4	24.0	6.4	6.91
Safety Storage Rm	Phone	28	1	0.5507	4	23.7	1.8	6.68
Safety Storage Rm	C1D5 Exit sign	28	206.5	0.4851	4	26.9	425.7	16.28
Safety Storage Rm	C1D5 Exit sign	28	153.75	0.5098	4	25.6	301.6	13.85
Safety Storage Rm	C1D5 Exit sign	28	205.75	0.5369	4	24.3	383.2	14.69
Safety Storage Rm	C1D5 Exit sign	28	29.25	0.5055	4	25.8	57.9	8.90
Safety Storage Rm	C1D4 Exit sign	28	2.25	0.5513	4	23.7	4.1	6.75
Safety Storage Rm	C1D4 Exit sign	28	0.5	0.5314	4	24.6	0.9	6.90
Safety Storage Rm	C1D4 Exit sign	28	4.75	0.5478	4	23.8	8.7	6.94
Safety Storage Rm	C1D4 Exit sign	28	1.75	0.5464	4	23.9	3.2	6.78
Parts Room East	Floor	28	0	0.5319	4	24.5	0.0	6.86
Parts Room East	Floor	28	2.25	0.496	4	26.3	4.5	7.50
Parts Room East	Door	28	7	0.5129	4	25.4	13.6	7.54
Parts Room East	Floor	28	0	0.5459	4	23.9	0.0	6.68
Parts Room East	Floor	28	0	0.5213	4	25.0	0.0	7.00
Parts Room East	Floor	28	4.5	0.5178	4	25.2	8.7	7.32
Parts Room East	Floor	28	0.25	0.5077	4	25.7	0.5	7.20
Parts Room East	Floor	28	0	0.5414	4	24.1	0.0	6.74
Parts Room East	Floor	28	1.25	0.5365	4	24.3	2.3	6.88
Parts Room East	Floor	28	1.25	0.5045	4	25.9	2.5	7.31
Parts Room East	Floor	28	0	0.5128	4	25.5	0.0	7.11

**Survey Data Reduction
Spreadsheet**

		Liquid Scintillation Counter Results (80103-1)						
Sample ID Item Number	Sample Location	Background (cpm)	Beta/Gamma CPM	Efficiency (3H)	Time (m)	MDA	DPM/100cm ²	Uncertainty (95%CL)
Parts Room East	Floor	28	0.75	0.5157	4	25.3	1.5	7.12
Parts Room East	Floor	28	2	0.4849	4	26.9	4.1	7.66
Parts Room East	Floor	28	0	0.5148	4	25.4	0.0	7.09
Parts Room East	Floor	28	0	0.5341	4	24.4	0.0	6.83
Parts Room East	Floor	28	0	0.5212	4	25.0	0.0	7.00
Parts Room East	Floor	28	4	0.5095	4	25.6	7.9	7.41
Parts Room East	Floor	28	0.5	0.53	4	24.6	0.9	6.91
Parts Room East	Floor	28	3	0.5128	4	25.5	5.9	7.30
Parts Room East	Floor	28	2.5	0.5399	4	24.2	4.6	6.91
Parts Room East	Floor	28	0.25	0.5043	4	25.9	0.5	7.25
Parts Room East	Floor	28	4.5	0.518	4	25.2	8.7	7.32
Parts Room East	Floor	28	0	0.5168	4	25.3	0.0	7.06
Parts Room East	Floor	28	2.75	0.5126	4	25.5	5.4	7.29
Parts Room East	Floor	28	1.75	0.5256	4	24.8	3.3	7.05
Parts Room East	Floor	28	0	0.5188	4	25.2	0.0	7.03
Parts Room East	Floor	28	10.5	0.5211	4	25.0	20.1	7.63
Parts Room East	Floor	28	0	0.5162	4	25.3	0.0	7.07
Parts Room East	Floor	28	0	0.5358	4	24.4	0.0	6.81
Parts Room East	Floor	28	0	0.5132	4	25.4	0.0	7.11
Parts Room East	Desk	28	2.25	0.5487	4	23.8	4.1	6.78
Parts Room East	Desk	28	0	0.5088	4	25.7	0.0	7.17
Parts Room East	Desk	28	2.25	0.5315	4	24.6	4.2	7.00
Parts Room East	Desk	28	0.5	0.5226	4	25.0	1.0	7.01
Clerks Office	Door	28	0	0.5283	4	24.7	0.0	6.91
Clerks Office	Floor	28	5.25	0.5132	4	25.4	10.2	7.43
Clerks Office	Floor	28	0	0.5234	4	24.9	0.0	6.97
Clerks Office	Floor	28	0	0.5419	4	24.1	0.0	6.73
Clerks Office	Floor	28	0	0.5015	4	26.0	0.0	7.27
Clerks Office	Floor	28	0	0.5091	4	25.6	0.0	7.17
Clerks Office	Floor	28	0	0.5316	4	24.6	0.0	6.86
Clerks Office	Floor	28	0.25	0.4846	4	26.9	0.5	7.54
Clerks Office	Floor	28	5.75	0.5185	4	25.2	11.1	7.39
Clerks Office	Desk	28	0	0.518	4	25.2	0.0	7.04
Clerks Office	Desk	28	0	0.5117	4	25.5	0.0	7.13

**Survey Data Reduction
Spreadsheet**

		Liquid Scintillation Counter Results (80103-1)						
Sample ID Item Number	Sample Location	Background (cpm)	Beta/Gamma CPM	Efficiency (3H)	Time (m)	MDA	DPM/100cm ²	Uncertainty (95%CL)
Clerks Office	Desk	28	0	0.5204	4	25.1	0.0	7.01
Clerks Office	Desk	28	0	0.5117	4	25.5	0.0	7.13
Clerks Office	Shelf	28	0	0.5295	4	24.7	0.0	6.89
Clerks Office	Shelf	28	6.75	0.5164	4	25.3	13.1	7.48
Safety Rm Hall	Floor	28	0	0.536	4	24.4	0.0	6.81
Safety Rm Hall	Floor	28	0	0.549	4	23.8	0.0	6.65
Safety Rm Hall	Floor	28	1.75	0.5362	4	24.3	3.3	6.91
Safety Rm Hall	Floor	28	0	0.5384	4	24.2	0.0	6.78
Safety Rm Hall	Floor	28	0	0.546	4	23.9	0.0	6.68
Safety Rm Hall	Floor	28	2.5	0.5369	4	24.3	4.7	6.94
Safety Rm Hall	Floor	28	0	0.5235	4	24.9	0.0	6.97
Safety Rm Hall	Floor	28	0	0.5311	4	24.6	0.0	6.87
Safety Rm Hall	Floor	28	0	0.5539	4	23.6	0.0	6.59
Safety Rm Hall	Floor	28	0	0.53	4	24.6	0.0	6.88
Safety Rm Hall	Floor	28	2.25	0.5264	4	24.8	4.3	7.07
Safety Rm Hall	Floor	28	0	0.532	4	24.5	0.0	6.86
Safety Rm Hall	Floor	28	0	0.5292	4	24.7	0.0	6.89
Safety Rm Hall	Floor	28	0	0.5357	4	24.4	0.0	6.81
Safety Rm Hall	Floor	28	0	0.5313	4	24.6	0.0	6.87
Safety Rm Hall	Floor	28	0.25	0.5276	4	24.7	0.5	6.93
Safety Rm Hall	Floor	28	0	0.5332	4	24.5	0.0	6.84
Safety Rm Hall	Floor	28	2	0.5314	4	24.6	3.8	6.99
Safety Rm Hall	Floor	28	4.25	0.541	4	24.1	7.9	6.99
Safety Rm Hall	Floor	28	0	0.5288	4	24.7	0.0	6.90
Safety Rm Hall	Floor	28	0	0.5294	4	24.7	0.0	6.89
Safety Rm Hall	Floor	28	0	0.5313	4	24.6	0.0	6.87
Safety Rm Hall	Floor	28	0	0.5423	4	24.1	0.0	6.73
Safety Rm Hall	Floor	28	1.25	0.54	4	24.2	2.3	6.83
Safety Rm Hall	Floor	28	0	0.541	4	24.1	0.0	6.74
Safety Rm Hall	Floor	28	2.75	0.5286	4	24.7	5.2	7.07
Safety Rm Hall	Floor	28	0.75	0.538	4	24.3	1.4	6.83
Safety Rm Hall	Floor	28	0	0.5162	4	25.3	0.0	7.07
Safety Rm Hall	Floor	28	2	0.5474	4	23.8	3.7	6.78
Safety Rm Hall	Floor	28	1	0.525	4	24.9	1.9	7.01

**Survey Data Reduction
Spreadsheet**

		Liquid Scintillation Counter Results (80103-1)						
Sample ID Item Number	Sample Location	Background (cpm)	Beta/Gamma CPM	Efficiency (3H)	Time (m)	MDA	DPM/100cm ²	Uncertainty (95%CL)
Safety Rm Hall	Floor	28	0	0.5181	4	25.2	0.0	7.04
Parts Rm Hall	Floor	28	1.75	0.5411	4	24.1	3.2	6.85
Parts Rm Hall	Door (Parts Rm)	28	5	0.4897	4	26.7	10.2	7.78
Parts Rm Hall	Floor	28	3.5	0.5245	4	24.9	6.7	7.17
Parts Rm Hall	Floor	28	5.75	0.5395	4	24.2	10.7	7.10
Parts Rm Hall	Door (Clerks Ofc)	28	0	0.4852	4	26.9	0.0	7.52
Parts Rm Hall	Floor	28	0	0.5218	4	25.0	0.0	6.99
Parts Rm Hall	Floor	28	4.5	0.5437	4	24.0	8.3	6.97
Parts Rm Hall	Door (to Stairs)	28	2	0.5351	4	24.4	3.7	6.94
Parts Rm Hall	Stairs	28	0	0.493	4	26.5	0.0	7.40
Parts Rm Hall	Stairs	28	0	0.526	4	24.8	0.0	6.94
Parts Rm Hall	Stairs	28	0	0.5455	4	23.9	0.0	6.69
Parts Rm Hall	Stairs	28	5	0.5093	4	25.6	9.8	7.48
Parts Rm Hall	Stairs	28	0	0.5168	4	25.3	0.0	7.06
Floor Cleaner	Scrubber	28	0	0.5342	4	24.4	0.0	6.83
Floor Cleaner	Squeegee	28	0.25	0.511	4	25.5	0.5	7.16

Note: C1 = Cabinet One

D5 = Drawer number five (bottom)

D4= drawer four (one up from bottom)

Attachment Three

WIPE SAMPLE RESULTS, 1/9/2008

**Survey Data Reduction
Spreadsheet**

		Liquid Scintillation Counter Results (80109-1)						
Sample ID Item Number	Sample Location	Background (cpm)	Beta/Gamma CPM	Efficiency (3H)	Time (m)	MDA	DPM/100cm ²	Uncertainty (95%CL)
Safety Storage Rm	C1D5 Handle	28	1	0.546	4	23.9	1.8	6.74
Safety Storage Rm	C1D5 Outside	28	0.5	0.5257	4	24.8	1.0	6.97
Safety Storage Rm	C1D5 Inner	28	6	0.525	4	24.9	11.4	7.31
Safety Storage Rm	C1D5 Inner	28	5.5	0.5456	4	23.9	10.1	7.01
Safety Storage Rm	C1D5 Inner	28	3.25	0.5204	4	25.1	6.2	7.21
Safety Storage Rm	C1D5 Inner	28	1.25	0.5286	4	24.7	2.4	6.98
Safety Storage Rm	Sealed drum	28	2.5	0.5096	4	25.6	4.9	7.32
Safety Storage Rm	Light switch	28	0	0.518	4	25.2	0.0	7.04
Safety Storage Rm	Door knob	28	0	0.5307	4	24.6	0.0	6.87
Safety Storage Rm	Shelf by phone	28	1.25	0.5259	4	24.8	2.4	7.01
Safety Storage Rm	Phone	28	3.5	0.5444	4	24.0	6.4	6.91
Safety Storage Rm	Cabinet 2 top	28	2	0.514	4	25.4	3.9	7.22
Safety Storage Rm	Floor	28	0	0.5432	4	24.0	0.0	6.72
Safety Storage Rm	Floor	28	4	0.5264	4	24.8	7.6	7.17
Safety Storage Rm	Floor	28	3.25	0.5482	4	23.8	5.9	6.85
Safety Storage Rm	Floor	28	1	0.4984	4	26.2	2.0	7.38
Safety Storage Rm	Floor	28	0	0.5396	4	24.2	0.0	6.76
Safety Storage Rm	Floor	28	1.5	0.5422	4	24.1	2.8	6.82
Safety Storage Rm	Floor	28	5.5	0.5009	4	26.1	11.0	7.63
Safety Storage Rm	Floor	28	2	0.5363	4	24.3	3.7	6.92
Safety Storage Rm	Floor	28	7.25	0.5442	4	24.0	13.3	7.12
Safety Storage Rm	Floor	28	0	0.4863	4	26.8	0.0	7.50
Safety Storage Rm	Floor	28	0	0.5252	4	24.9	0.0	6.95
Safety Storage Rm	Floor	28	0.5	0.5106	4	25.6	1.0	7.18
Safety Storage Rm	Floor	28	4	0.5313	4	24.6	7.5	7.11
Safety Storage Rm	Floor	28	0.5	0.5366	4	24.3	0.9	6.83
Safety Storage Rm	Floor	28	1	0.5302	4	24.6	1.9	6.94

Note: C1 = Cabinet One

D5 = Drawer number five (bottom)

D4= drawer four (one up from bottom)