

Environment, Safety, Health, and Assurance (ESH&A) Fiscal Year 2012 Trend Analysis

An annual trend analysis is performed to determine common occurrences or prevailing events that should be addressed with additional inspections, training, reviews, policies, lessons learned, etc. The following sources of information were reviewed for trend analysis from FY2008 to FY2012:

- Employee Safety and Security Concerns
- Independent Walk-Through Findings
- Program / Department Walk-Through Findings
- Walk-About (walk-throughs exterior to buildings) Findings
- Discrepancy Reports
- Injury and Illness Data
- Event Reporting (including potentially reportable events, Topical Appraisals and Issues, DOE / External Reviews, etc.)
- Causal Factors of Ames Local Events

Employee Safety and Security Concerns

As indicated in Table 1, there was a 25% decrease in the total number of Employee Safety and Security Concerns from the 4-year average. The Ames Laboratory actively promotes that employee safety and security concerns be brought to the attention of ESH&A. The types of concerns recorded in FY2012 include:

- A research group was concerned about a pipe (drain line) removal project in the basement hallway of Spedding Hall and radiation hazard signage. Signs were posted indicating a radiation hazard as required, however the potential radioactive material is internal surface contamination of the pipe from historical activities. The pipe was handled appropriately and no exposures were noted.
- Slick spots were observed at entrance to Spedding Hall due to ice.
- Parking spots normally reserved for visitors during the work week were empty on the weekends and employees wanted to use them. The signs were updated.
- A research log book was missing and the group leader thought it was stolen. The log book was later found in the possession of a group member.
- Welding fumes from the installation of new doors/frames in Spedding were being captured by a HEPA negative air machine and then vented into an unoccupied laboratory. Although the lab was unoccupied, it had sensitive instruments and the group leader was concerned. The flexible air duct was relocated to a fume hood.
- A concern was voiced about the height of the new visual display screen in the renovated 301 Spedding Auditorium (possible neck strain).

Employee Safety and Security Concerns							
Category	FY 2008	FY 2009	FY 2010	FY 2011	4-Year Average	FY 2012	% Change from 4-Year Average
Administrative	0	0	3	1	1	1	Same
Chemical Spills	1	0	0	0	.25	0	Decrease
Fire Safety	0	1	0	2	.75	0	Decrease
General Safety	2	1	6	2	2.75	2	27% Decrease
Industrial Hygiene	0	1	3	0	1	0	Decrease

Environmental	0	0	2	0	.50	0	Decrease
Security	1	1	0	1	.25	1	300% Increase
Radiological	0	0	0	1	0	1	Decrease
Traffic Safety	0	0	0	0	0	0	None
Property Management	1	0	1	0	.50	1	100% Increase
Other (non-safety)	0	0	0	0	0	0	None
Odors	1	0	0	0	.25	0	Decrease
Total Concerns	6	4	15	7	8	6	25% Decrease

Table 1

Independent Walk-Through Findings

Ames Laboratory experienced a 20% increase in Independent Walk-Through findings, compared to the 4-year average, as indicated in Table 2. There was a large increase (87%) in the category of Industrial Hygiene. This is due to secondary chemical containers either not being labeled or the label is fading. To ensure these findings are being corrected, the walk-through team is identifying specific findings instead of writing a blanket finding to an entire group which has proven to be ineffective.

As in years past, some of the findings would not be cited by OSHA because Ames Laboratory is aiming higher than just meeting the minimum standard. The OSHA regulations are intended to be a basic minimum for compliance and the expectation of Ames Laboratory and the Walk-Through Team exceeds those set by OSHA. Frequently the Walk-Through Team will identify Level 3 Findings (best management practices) and elevate them to Level 2 Finding - Moderate Significance to ensure they are tracked and corrected. The severity of the findings overall has been minimal. No High Hazard Findings have been identified since June 2003. There were three (3) Noteworthy Practices identified. Noteworthy Practices are conditions, which, in the judgment of the walk-through specialists, are examples of excellence and have application to other areas of the Laboratory.

There continues to be a high level of participation with the Ames Site Office Representative, a member of the Executive Council (typically the Director), Purchasing and Property Services Manager, and an ISU EH&S Representative.

Although there have been increases in some categories of findings by percentage, the actual total number of findings in those specific categories is not of major concern. The increase in property management findings is due to the participation of the Purchasing and Property Services Manager identifying unused / obsolete equipment in the laboratories.

The Independent Walk-Through Program has proven to be an effective tool to educate, promote, and measure compliance within the facility.

Independent Walk-Through Findings							
Categories	FY 2008	FY 2009	FY 2010	FY 2011	4-Year Average	FY 2012	% Change from 4-Year Average
Admin. Controls	0	1	0	2	.75	2	167% Increase
Comp. Gases	10	10	5	5	7.5	6	20% Decrease
Confined Space Entry	0	0	0	0	0	0	None
Electrical Safety	64	54	45	39	50.5	55	9% Increase
Emergency Planning	3	2	1	2	2	2	Same
Environmental	15	11	15	6	11.75	11	6% Decrease

Independent Walk-Through Findings							
Categories	FY 2008	FY 2009	FY 2010	FY 2011	4-Year Average	FY 2012	% Change from 4-Year Average
Fire Safety	8	6	9	1	6	8	33% Increase
General Safety	65	46	29	35	43.75	50	14% Increase
Hoisting & Rigging	0	0	0	0	0	0	None
Hazard Communication	3	2	1	1	1.75	3	71% Increase
Industrial Hygiene	10	23	36	21	22.5	42	87% Increase
Infrastructure	0	0	0	1	.25	0	Decrease
Ladder Safety	0	1	2	0	.75	1	33% Increase
Laser Safety	0	0	1	0	.25	0	Decrease
Life Safety Code	5	5	2	2	3.5	1	71% Decrease
Lockout/Tagout	0	0	0	0	0	1	Increase
Machine Guarding	2	5	1	1	2.25	2	11% Decrease
PPE	2	6	4	5	4.25	2	53% Decrease
Plumbing	0	0	0	0	0	0	None
Procedural	0	1	0	0	.25	0	Decrease
Property Management	4	1	3	13	5.25	5	4.8% Decrease
Radiation	1	0	0	0	.25	0	Decrease
Respiratory	5	1	3	1	2.5	8	220 % Increase
Training	0	0	0	0	0	0	None
Totals	197	175	157	135	166	199	20% Increase
Noteworthy Practices	0	0	0	0	0	3	Increase

Table 2

Program / Department Walk-Through Findings

The information collected from the program/department walk-throughs is requested in percentage (not the total number of findings). Specific comparisons (number of findings), cannot be made to the Independent Walk-Through Findings, but general observations on the type of concerns identified can be ascertained. The largest category observed was “General Safety” and the second largest category was “Electrical” concerns. This is consistent with the Independent Walk-Through Program. No major concerns are apparent.

Walkabout (Walk-Through exterior to buildings) Findings

Walkabouts (i.e., building roofs, yards, sidewalks, exterior doors and windows) have been performed annually since 2005. The goal of the Walk-About is to identify potential safety hazards and violations that are not identified during the Independent Walk-Through Program. Hazards such as deviations in concrete for walking and working surfaces, proper operation of Ground Fault Circuit Interrupters, ensuring handrails on stairs are secure, proper signs are posted for hazards, emergency exits are maintained properly, etc. No High Hazard Findings have been identified to date. As with the Independent Walk-Throughs, some of the findings would not be cited by OSHA and are categorized as best management practices. The Walkabout provides a great opportunity to identify other areas of concern including as deteriorating infrastructure such as dried or missing caulking on windows, ground erosion, removal of unplanned bushes and trees, concerns to be monitored for future walkabouts, etc.

Year	Concerns
2008	7
2009	5
2010	9
2011	6
2012	7

Table 3

Discrepancy Reports

Discrepancy reports are issued by the Plant Protection staff during facility tours. The total discrepancies have decreased 38% from the previous 4-year average. The organization(s) responsible for the discrepancies are notified via Plant Protection / ESH&A for follow-up and correction. For two years in a row, the most notable decrease is "Coffee Pots On and Hot". Last year, there was a 65% decrease in this category and this year there was an 85% decrease. Two years ago, this was a safety emphasis and coffee drinkers were asked to purchase coffee makers with automatic shut offs or external timers for existing coffee pots. This has proven to be very effective.

There was an increase in fume hood sashes not lowered and controls placed into set back from FY 2011, but there was still a 25% decrease over the 4-year average. Fume hood users continued to be reminded to lower the sash and place control into setback by the use of stickers applied to the hood glass and e-mails sent to group leaders. By placing the fume hood in setback and lowering the sash, Facilities and Engineering Services estimates that simple action could save up to \$1100 per hood in energy savings.

No concerns are apparent.

Discrepancy Reports							
Category	FY 2008	FY 2009	FY 2010	FY 2011	4-Year Average	FY 2012	% Change from 4-Year Average
Coffee Pots On & Hot	72	68	49	24	53.25	8	85% Decrease
Soldering Pen/Iron on & hot	9	10	6	2	6.75	1	85% Decrease
Unsecured Gas Cylinder	19	11	21	13	16	12	25% Decrease
Natural Gas Valve On	15	9	8	7	9.75	15	54% Increase
Main Cylinder Valve Open	22	14	16	5	14.25	3	79% Decrease
Uncapped Cylinder	25	16	8	8	14.25	11	23% Decrease
Unattended Flame	3	1	1	1	1.5	1	33% Decrease
Obstructed Hallway / Door	3	12	15	12	10.5	3	71% Decrease
Unsecured Door	86	96	84	54	80	63	21% Decrease
Hood Sash / Set Back <i>(New Category -2007 Emphasis)</i>	232	249	105	95	170.25	127	25% Decrease
Improper / Incompatible Storage	7	7	2	6	5.5	1	82% Decrease
Obvious Equipment Malfunction	13	19	7	4	10.75	5	53% Decrease
Window Open	5	8	6	3	5.5	6	9% Increase
Miscellaneous	57	46	32	24	39.75	16	60% Decrease
Total Discrepancies	568	567	360	258	438.25	272	38% Decrease

Table 4

Injury and Illness Data

There were six (6) total injuries in FY12 and none of them met the threshold of OSHA Recordable (treatment beyond first aid). The injuries include:

1. Cut thumb knuckle on sheet metal edge.
2. Scraped middle finger when reaching into research equipment.
3. Chemical contact to index finger (not wearing chemical gloves).
4. Spatter of acetone to face when using a squeeze bottle.
5. Laceration to scalp from fume hood sash (employee was leaning into the hood).
6. Pricked finger when using scalpel to open small sample.

The Laboratory continues to stress safety/accident prevention in General Employee Training, Safety Awareness Training for new hires, line management responsibility for safety, distribution of lessons learned, circulation of safety guides, use of personal protective equipment, topic specific safety training, etc. In addition, the Laboratory Director continues to send Laboratory-wide safety messages stressing the importance of safety and the expectation for all employees to maintain a safe and healthful workplace.

Injury and Illness Data () indicates OSHA Recordable Injury							
Type of Injury / Illness	FY 2008	FY 2009	FY 2010	FY 2011	4-Year Average	FY 2012	% Change from 4-Year Average
Contusion / Abrasions	0	1	1	2	1	1	Same
Burns	0	0	1	2	.75	0	Decrease
Chemical Exposure	0	0	0	2	.5	2	300% Increase
Eye Injury	0	1	0	0	.25	0	Decrease
Fracture	0	1 (1)	0	1 (1)	.5 (.5)	0	Decrease
Laceration	2	4 (2)	0	3 (3)	2.25 (1.25)	3	33% Increase
Puncture	0	0	0	0	0	0	None
Acute Musculoskeletal Injury	1 (1)	0	2 (1)	1 (1)	4 (.75)	0	Decrease
Miscellaneous:							
Hematoma	0	0	0	1 (1)	.25 (.25)	0	Decrease
Respiratory Irritant	0	0	0	0	0	0	None
Twisted Ankle	1	0	0	0	.25	0	Decrease
Avulsion (toenail)	0	1	0	0	.25	0	Decrease
Bee Sting	0	1	0	0	.25	0	Decrease
Splinter	0	0	1	0	.25	0	Decrease
Total	4	9	5	12	7.5	6	20% Decrease
OSHA Recordable	1	3	2	6	3	0	Decrease
Non-OSHA Recordable	3	6	3	6	4.5	6	33% Increase
Lost Work Days –LWD	2	2	0	28	8	0	Decrease
Restricted Work Days – RWD	18	0	12	6	9	0	Decrease
Total of LWD and RWD	20	2	12	34	17	0	Decrease
DART Case Rate	.23	.2	.22	.45	0.275	0	Decrease
Total Recordable Case Rate (TRCR)	.23	.68	.44	1.34	0.672	0	Decrease

Table 5

DART = Days Away, Restricted, and/or Transferred

Event Categorizations (FY)

The Laboratory utilizes information from a broad variety of sources to determine events which are reviewed against external and local reporting criteria. The sources include concerns, injuries and illnesses, assessment results, and operational data. Event reporting information is presented in Tables 6-8: Event Reporting Summary, Reportable Events, and Ames Local Events. The following are the events categorized in FY 2012:

Cat. #	Date	Title	Conclusion
E11-071	10-12-11	Hydrofluoric Acid Release	Ames Local – ORPS
E11-072	10-6-11	Service Contract Act – Topical Appraisal	Ames Local - ORPS
E11-073	10-21-11	Thumb Laceration	Ames Local-CAIRS
E11-074	10-25-11	C-CURE (access control) System Non-Functional	Ames Local-ISC
E11-075	10-26-11	Metals Development Roof Door Alarms	Ames Local-ISC
E11-076	11-3-11	Contractor Assurance System Peer Review	Ames Local – ORPS

E11-077	10-19-11	Type 1 Low System Compromise - Trojan exploit	Ames Local-ISC
E11-078	11-11-11	Laptop Theft	Ames Local-ISC
E11-079	11-25-11	Microwave Oven Smoke	Ames Local-ORPS
E11-080	12-01-11	Unsecured Records Room	Ames Local-ISC
E11-081	12-01-11	C-CURE (access control) System Non-Functional	Ames Local-ISC
E11-082	12-16-11	Finger injury (scrape)	Ames Local-ORPS
E11-083	12-20-11	Finger Injury, chemical	Ames Local-CAIRS
E12-001	1-3-12	Suspicious Letter	Not Reportable
E12-002	01-18-12	Acetone Splash (dot size) - face/eye	Ames Local-CAIRS
E12-003	2-17-12	Suspect/Counterfeit Defective Items Discovery	ORPS SC-AMSO-AMES-AMES-2012-0001
E12-004	3-13-12	Vandalism to Spedding East Entrance Discovered	Ames Local-ISC
E12-005	3-19-12	B47 SPH Fire Alarm	Not Reportable
E12-006	3-13-12	Type 1 Low System Compromise - Trojan exploit	Ames Local-ISC
E12-007	3-21-12	Type 1 Low System Compromise - Trojan exploit	Ames Local-ISC
E12-008	3-23-12	Outdated Fire Extinguisher Maintenance by Vendor	Ames Local-ORPS
E12-009	04-04-12	Maintenance Contract Not Renewed by Vendor	Ames Local- ORPS
E12-010	04-11-12	Review of Costs Incurred for Allowability by Internal Audit	Not Reportable
E12-011	4-20-12	25 dB STS Identified for Employee (later testing reversed concern)	Not Reportable
E12-012	5-7-12	Mattress Fire - VEISHA	Ames Local -ISC
E12-013	5-17-12	Safeguards and Security Risk Assessment	Ames Local-ISC
E12-014	5-17-12	Sample Transportation Issue Evaluated	Not Reportable
E12-015	05-23-12	Fire Alarm 334 Spedding	Ames Local- ORPS
E12-016	05-27-12	Compressed Air Leak	Not Reportable
E12-017	05-27-12	Type 1 Low System Compromise - Trojan exploit	Ames Local-ISC
E12-018	6-5-12	Suspected Additional Vandalism to East Spedding Entrance (E12-004)	Ames Local -ISC
E12-019	6-6-12	Steam Outage, Wilhelm Hall	Not Reportable
E12-020	06-08-12	Type 1 Low Compromise - Fake AV	Ames Local-ISC
E12-021	06-13-12	Type 1 Low Compromise -Phishing e-mail	Ames Local-ISC
E12-022	06-18-12	199 Metals Development Smoke Alarm	Ames Local-ORPS
E12-023	06-19-12	Loss of Electrical Service Site-Wide	Ames Local-ORPS
E12-024	06-29-12	Minor Scalp Laceration	Ames Local -CAIRS
E12-025	06-29-12	Switchgear Fire 244 DEV	ORPS SC-AMSO-AMES-AMES-2012-0002
E12-026	6-28-12	Environmental Management System Assessment	Ames Local-ORPS
E12-027	07-06-12	401A Spedding Fire Alarm	Ames Local-ORPS
E12-028	08-02-12	Materials Control and Accountability (MC&A) Review	Ames Local-NTS
E12-029		Finger Prick from Scalpel	Ames Local - CAIRS
E12-030	08-17-12	Loss of Electrical Service site-wide	Ames Local-ORPS
E12-031	8/20/12	Rad Sample Shipment Process – Topical Appraisal	Ames Local -ORPS
E12-032	8/22/12	Loss of Electrical Service site-wide	Ames Local – ORPS
E12-033	8-22-12	Lapse of License for Registered Nurse	NTS-AMSO-AMES-AMES-0001
E12-034	09-06-12	Minor Communication Impairment, Simplex System	Ames Local-ORPS
E12-035	09-07-12	Impaired Fire Protection System	Ames Local-ORPS
E12-036	09-07-12	Magnetic fire door closers failed to close	Ames Local-ORPS
E12-037	09-04-12	HF-Nitric Acid (non-injury, reported as a precaution)	Not Reportable
E12-038	9-13-12	Fire Protection Program Review	Ames Local-ORPS
E12-039	09-26-12	X-Ray Systems Topical Appraisal	Ames Local - NTS
E12-040	09-26-12	Baseline Needs Assessment - Topical Appraisal	Not Reportable (ORPS, NTS, ISC or Local)
E12-041	9-5-12	Rad Protocol Failure	Ames Local - NTS
E12-042	1-12-12	Emergency Plan Review - Topical Appraisal	Not Reportable (ORPS, NTS, ISC or Local)
E12-043	09-27-12	Annual Radionuclide Emissions –	Ames Local-ORPS

Topical Appraisal			
E12-044	09-27-12	Hydro Fluorination Activity-- Topical Appraisal	Not Reportable (ORPS, NTS, ISC or Local)
E12-045	9-27-12	Confined Spaced Entry –Topical Appraisal	Not Reportable (ORPS, NTS, ISC or Local)
E12-046	09-27-12	RAM and RDG Procurement Process – Topical Appraisal	Not Reportable (ORPS, NTS, ISC or Local)
E12-047	09-27-12	NFPA 10 (Fire Extinguishers) – Topical Appraisal	Not Reportable (ORPS, NTS, ISC or Local)
E12-048	7-16-12	Spill Prevention, Control, and Countermeasures (SPCC) - Topical Appraisal	Not Reportable (ORPS, NTS, ISC or Local)
E12-049	9-28-12	Security Categorization of Information and Information Systems	Not Reportable (ORPS, NTS, ISC or Local)
E12-050	9-28-12	Energy Employees Occupational Illness Compensation Program Act (EEOICPA) Procedure - Topical Appraisal	Not Reportable (ORPS, NTS, ISC or Local)
E12-051	05-29-12	Type 1 Low System Compromise User infected with fake anti-virus	Ames Local-ISC
E12-052	7-25-12	Type 1 Low System Compromise User was infected with Zerozxis	Ames Local-ISC
E12-053	9-21-12	Type 1 Low System Compromise User infected by paywall banner	Ames Local-ISC

Table 6

Event Reporting

As indicated in Table 7, there were two (2) incidents reported to the Occurrence Reporting Processing System (ORPS) and one (1) incident reported to the Noncompliance Tracking System (NTS). There were no injuries meeting the threshold of reporting to the Computerized Accident / Incident Reporting System (CAIRS). And there were no Incidents of Security Concern (ISC) meeting the threshold of reporting.

Event Reporting Summary (FY)							
Categories	2008	2009	2010	2011	4-Year Average	2012	% Change from 4-Year Average
Occurrence Reports (ORPS)	4	3 (*)	4 (*)	3 (*)	3.5	2	43% Decrease
Noncompliance Tracking System (NTS)	0	1 (2)	0	0	.25	1	300 % Increase
Incidents of Security Concern (ISC)	0	0	0	0	0	0	None
Ames Local (AL)	38	54	64	55	52.75	45	15% Decrease
Accident and Injury (CAIRS)	1	3 (*) (#)	2 (*)	6 (*)	2	0	Decrease
Other (below reporting threshold)	24	20	13	18	18.75	17	9% Decrease
Total Events Screened	67	79	83	81	77.5	65	16% Decrease

Table 7

(* = Combination ORPS / CAIRS)

(# = Combination CAIRS/NTS)

The Reportable Events, Table 8, provides specific details on the reportable events since FY2004.

Reportable Events (FY)					
Year	Type	Identification	Date	Title	Description
FY 2004	ORPS	CH—AMES – Ames-2004-0001	1-29-04	Electrical Contact	Researcher contacts 110 VAC when trying to reduce the clicking noise of an electrical contact / relay within the interlock box.
FY 2005	ORPS	CH—AMES – Ames-2004-0002	12-20-04	Suspect / Counterfeit Bolts	While performing a Readiness Review, suspect / counterfeit bolts (non load bearing) was discovered.
	ORPS	CH—AMES – Ames-2005-0001	2-1-05	Potential High Voltage Exposure	A visiting scientist (not supported by SC Funding) assembled a prototype research system before seeking Readiness Review.
	ORPS	CH—AMES – Ames-2005-0002	4-20-05	Flash Hazard Analysis Accuracy Questioned	During the SC Electrical Safety Review, the consultant questioned the accuracy of the analysis.
	ORPS	CH—AMES – Ames-2005-0003	8-10-05	Software Issue Found in Fire Alarm System	A smoke detector in building alarmed at the fire panel and central station but did not activate the alarms.
FY 2006	ISC	ISC – IMI 3(#19) Incident # 51451	2-17-06	System Intrusion	An intruder allegedly from force.coe.neu.edu used a real username/password to access gateway.cmpgroup.ameslab.gov.
FY 2007	ORPS	CH- - Ames- Ames-2007-0001	12-29-06	Smolder /Smoke in Renovation Area	A small crack in the concrete floor between two buildings allowed a spark from plasma-arc cutting to reach expansion joint material.
	ORPS	CH- - Ames- Ames 2007-0002	7-27-07	Electrical Conduit Penetration	Conduit penetrated by screw during roofing operations.
FY 2008	ORPS	SC - - AMSO- AMES-AMES- 2007-0003	10-4-07	Switch Failure – Fire Alarm System	During annual fire alarm system test and fire drill, the Wilhelm Hall over-ride switch failed.
	ORPS	SC - - AMSO- AMES-Ames- 2008-0001	4-23-08	Suspect /Counterfeit Bolts	After review of a lessons learned, the man-lifts were reviewed with one having suspect/counterfeit bolts.
	ORPS	SC - - AMSO- AMES-Ames- 2008-0002	5-16-08	Hydrofluoric Acid SAD Procedure Deviation	A larger cylinder of Hydrofluoric Acid was purchased & installed contrary to the Safety Analysis Document and Standard Operating Procedure.
	ORPS	SC - - AMSO- AMES-Ames- 2008-0003	7-3-08	HVAC Vent Unexpectedly Drops	HVAC Upgrade Project a wall vent was not verified that it was removed before removing supply duct.
FY 2009	ORPS & CAIRS	SC - - AMSO- AMES-Ames- 2008-0004	10-24-08	Elbow Injury (Fracture)	An Engineer while applying pressure on opposing wrenches dislodged a bone in the elbow from a previous non-work related injury.
	ORPS & NTS	SC - - AMSO – AMES – Ames – 2009-0001	5-18-09	Beryllium Contamination Found	As a result of performing wipe sampling in preparation for a fume hood exhaust stack lining project, beryllium was discovered above the DOE Limits
	ORPS	SC- - AMSO- AMES-Ames – 2009-0002	9-25-09	Water Service Impairment (Fire Safety) at Service Buildings (ARRA)	ARRA funds stimulus money was appropriated to remodel a portion of the Campus warehouse to provide needed space for the storage of record. Subcontractor determined that the 4 inch water service was inadequate for the sprinkler system.
FY 2010	ORPS	SC- - AMSO – AMES – Ames- 2009-0003	10-7-09	Electric Shock	While assembling components of the biomass auger reactor, the student received an electric shock. Activity in space leased by Ames Lab by non employee.
	ORPS	SC-AMSO- AMES-Ames- 2009-0004	12-1-09	Fire of UPS	Fire was detected involving a UPS System for the Scalable Computing Lab.
	ORPS & CAIRS	SC-AMSO- AMES-Ames- 2010-0001	6-8-10	Dropped UPS on Dock	Delivering a (UPS) unit to loading dock, employees dropped it on its side. As the unit fell, one employee jumped out of the way resulting in neck strain that required prescription muscle relaxer and restricted work duty.

Reportable Events (FY)					
Year	Type	Identification	Date	Title	Description
	ORPS	SC_AMSO-AMES-Ames-2010-0002	6-18-10	Rad and BE Discovery	Elevated radiological readings were discovered in recessed area at the tops of some doors.
	CAIRS	C10-0001	8-27-10	ARRA Contractor Injury (hernia)	While lifting a door frame into place, contractor pain in his groin. Determined to be hernia requiring surgery.
FY 2011	ORPS & CAIRS	SC-AMSO-AMES-Ames-2011-0001	1-3-11	Broken Arm & Ankle and Dislocated Elbow	Employee fell downstairs at ISU Library. Steps in good condition.
	ORPS	SC-AMSO-AMES-Ames-2011-0002 (R)	1-6-11	Recurring Injuries	Custodians falling during floor stripping and waxing activities.
	ORPS	SC-AMSO-AMES-Ames-2011-0003	9-12-11	Cut Conduit	Contractor performing demolition cut into a concealed conduit with 110 VAC.
FY 2012	ORPS	SC-AMSO-AMES-AMES-2012-0001	2-16-12	Suspect/Counterfeit and Defective Parts	Three ratchet strap assemblies were found to have S/CI bolts installed and a suspect bolt on a platform lift was found the same day during inspections
	ORPS	SC-AMSO-AMES-AMES-2012-0002	6-29-12	Switchgear Fire	Electrical switchgear in 244 Metals Development failed and caused a fire and evacuating the building for the day. The fire was quenched using a CO2 extinguisher.
	NTS	NTS-AMSO-AMES-AMES-2012-0001	8-22-12	Lapse of Registered Nurse License	Supervising nurse reported that license had expired December 15, 2011.

Table 8

Causal Factors

As detailed in the following tables and discussion, TapRoot analysis is performed on reportable events and causal analysis process is performed on Ames Local Events.

TapRoot Analysis

TapRoot is a formal (standardized) method used at Ames Laboratory to investigate and determine causal factors for significant events (those beyond Ames Local Events). TapRoot was chosen because it is also used by other DOE facilities and suggested by the Ames Site Office. The use of TapRoot at Ames Laboratory began in 2004 for Reportable Events (Occurrences (ORPS), Non Compliance Tracking System (NTS) and Incidents of Security Concern (ISC). Table 9 lists the causal analysis associated with each reportable event. No trends are apparent.

TapRoot Analysis of Reportable Events		
Event Number	ORPS Description	Causal Analysis
ORPS – 2004 - 001	Electrical Shock –Group Leader not authorized to remove cover.	A5 – Communication LTA
ORPS – 2004 - 002	Suspect Bolts - Equipment sent from Manufacturer with suspect bolts	A1 – Design / Engineering Problem
ORPS – 2005 - 001	Potential High Voltage Exposure	A3 – Human Performance
ORPS - 2005 - 002	Accuracy of Flash Analysis Questioned	A1 - Design / Equipment Problem
ORPS – 2005 - 003	Fire Alarm Annunciation Failed to Activate	A2 – Equipment / Material Problem
ISC – IMI – 3(#19) #51451	Condensed Matter Physics SSH Incident	A4 – Management Problem
ORPS 2007 - 0001	Smoke – Smoldering Event in Graphics Renovation	A2 – Equipment Problem

TapRoot Analysis of Reportable Events		
Event Number	ORPS Description	Causal Analysis
ORPS 2007- 0002	Electrical Conduit Penetration at Warehouse	A3 – Human Performance
ORPS 2007 – 0003	Wilhelm Hall Annunciators Did Not Activate During Fire Drill	A2 - Equipment / Material Problem
ORPS 2008 - 0001	Suspect / Counterfeit Parts on Man-lift	A2 – Equipment / Material Problem
ORPS 2008 - 0002	Hydrofluoric Acid Procedure Deviation	A3 – Human Performance
ORPS 2008 - 0003	HVAC Upgrade Project – Wall Vent Fell Onto Desk	A4- Management Problem
ORPS 2008 - 0004 & CAIRS	Elbow Injury (Fracture)	None Deemed Appropriate – Legacy Injury
ORPS 2009 - 0001 and NTS	Beryllium Contamination Found	A7 – Other Problem
ORPS 2009 - 0002	Water Service Impairment (Fire Safety) at Service Buildings	A2 – Equipment / Material Problem
ORPS 2009 - 0003	Electric Shock (non-Ames Lab employee in lease space)	A4 – Management Problem
ORPS 2009 - 0004	Fire in UPS Unit	A2- Equipment / Material Problem
ORPS 2010 - 0001 and CAIRS	Dropped UPS Unit	A4- Management Problem
ORPS 2010 - 0002	Rad Beryllium Discovery in Tops of Doors	A4 - Management Problem
ORPS 2011 - 0001 & CAIRS	Broken Ankle, Broken Arm, Dislocated Elbow	A3 – Human Performance
ORPS 2011 -0002 (R)	Floor Maintenance Injuries (Recurring)	A4 – Management Problem
ORPS 2011 - 0003	Energized 110 Volt Conduit Cut	A3 - Human Performance
ORPS 2012-0001	Suspect/Counterfeit and Defective Parts	A2 – Equipment / Material Problem
ORPS 2012-0002	Switchgear Fire	A2 – Equipment / Material Problem
NTS 2012-0001	Lapse of Registered Nurse License	A3 – Human Performance

Table 9

Causal Analysis of Ames Local Events

Causal Analysis of Ames Local Events started in May of 2004. An Ames Local Event is one which does not meet the threshold of reportability to DOE, but warrants further investigation and potentially the development of corrective actions. The Laboratory also includes non-recordable injuries and illnesses (Ames Local- CAIRS) as an opportunity to ensure injuries/illnesses are investigated, evaluated and potential corrective actions are documented and tracked. Furthermore, Ames Local Events are evaluated for recurrence (trending). Ames Laboratory views the causal analysis (investigation and analysis) program as a proactive opportunity to address concerns and develop corrective actions to prevent minor concerns which could be a precursor to a severe events and injuries.

Table 10 lists the causal factors identified for Ames Local events for FY2008 through FY2012. The predominant causal factor identified is “A3-Human Performance Less Than Adequate” from DOE Guide 232.2. This is generally consistent with the numbers generated annually since 2004.

Causal Factors of Ames Local Events							
Causal Factor	FY08	FY09	FY10	FY11	4-Year Average	FY12	% Change from 4-Yr Average
A1- Design/Engineering Problem	1	2	3	1	1.75	0	Decrease

Causal Factors of Ames Local Events							
Causal Factor	FY08	FY09	FY10	FY11	4-Year Average	FY12	% Change from 4-Yr Average
A2- Equipment/Material Problem	7	6	15	7	8.75	9	2.9% Increase
A3- Human Performance Less Than Adequate	13	30	14	14	17.75	13	27% Decrease
A4- Management Problem	19	11	4	10	11	7	36% Decrease
A5- Communications Less Than Adequate	2	6	4	2	3.5	2	43% Decrease
A6- Training Deficiency	2	0	0	2	1	0	Decrease
A7- Other Problem (External Phenomena, Radiation/Hazardous Material Problem)	0	2	2	1	1.25	2	60% Increase

Table 10