

# **Argonne National Laboratory - East**

## **ESH/QA Incident/Event Quarterly Performance Analysis**

**3rd Quarter CY 2004**

Prepared by:

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ANL-E, EQO Division

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## Executive Summary

At ANL-E incident reviews for trends and recurring events are conducted as part of our integrated safety management program implementation. Each incident, ORPS reportable and non-ORPS reportable events, are evaluated with other similar events to identify trends and needed corrective actions to prevent recurrence. The type of incident will determine which process is used to evaluate the incidents for trends. At ANL-E formal processes are established and implemented for injury/illness cases and potential PAAA issues.

For the period from October 1, 2003 to September 30, 2004, 307 incidents were reported by divisions.

For injury/illness cases the process used was:

1. The Division conducted an investigation, evaluated the incident for trends, and developed corrective actions.
2. An EQO safety engineer reviewed all injury/illness cases for trends using similar first aid, OSHA recordable and ORPS cases for at least the previous 12 months.
3. At the weekly the Occupational Injury/Illness Review Committee meeting cases are discussed by the committee membership which includes physicians, safety engineers, industrial hygienists and line managers. As appropriate, the committee provided line management recommended corrective actions.
4. The September injury/illness cases (see attached Monthly Safety Report for case information) were evaluated with the previous 12 months cases to identify trends.

The above injury/illness reviews did not identify any noteworthy trends or recurring events.

For issues and incidents involving radiological materials and/or nuclear facilities the process used was:

1. A review of each reported issue and incident was conducted by the PAAA Coordinator Alternate. The review included an evaluation for trends by the Radiation Safety Officer, the PAAA Coordinator, and other Subject Matter Experts.
2. The PAAA Coordinator Alternate evaluated each potential PAAA issue for NTS reportability and similarity to all other reported events.
3. The PAAA Review Committee and the PAAA Coordinator evaluated the issues and incidents individually and as a group of similar events for NTS reportability.

The above reviews resulted in one NTS report, submitted September 21, 2004, in which an identified trend involving three individual events was reported (re: NTS Report # NTS-CH-AA-ANLE-ANLE-2004-0003).

For other events, such as transportation, environmental releases, etc., EQO discussed events at our weekly staff meetings. The discussion involved identification of similar events and no trends were identified.

In addition to the above review activities conducted by the Laboratory, at weekly meetings between DOE-ASO and Laboratory management, incidents are discussed and they are reviewed for trends. The weekly meetings did not identify any trends other than the NTS Report (re: NTS Report # NTS-CH-AA-ANLE-ANLE-2004-0003). Several issues continue to be evaluated concerning individual deficiencies related to implementation of the sealed source radiological protection program.

In July 2004, DOE-ASO and EQO ESH/QA professionals reviewed the previous fifteen months of incidents/events for trends and recurrence reportability. As a result of the July meeting, additional evaluation was conducted and a grouping of three events was determined to be NTS reportable (re: NTS Report # NTS-CH-AA-ANLE-ANLE-2004-0003).

### **Incident Trend Evaluation and Reporting**

If trends are identified they are evaluated for ORPS and NTS reportability. ORPS and NTS reports are shared widely throughout the Laboratory. For trends that are not reported into ORPS or NTS, the trend would be reported in our Monthly Safety Report. The Monthly Safety Report is distributed to line managers, ES&H Coordinators and others, and is available on the ANL-E intranet.

### **Planned Program Improvements**

The following program improvements are planned:

1. Include new NTS Report information in the Monthly Safety Report
2. Document in the Monthly Safety Report that an incident trending analysis was conducted and results

### **Areas Requiring Continued Management Attention**

**Laser Safety** - In the third quarter of CY 2004 two events occurred which involved laser use. The moving of a laser without proper authorization coupled with a researcher's laser eye injury (ORPS Report #CH-AA-ANLE-ANLEAPS-2004-0003) indicates that continued management attention is needed to enhance laser safety. In September, the Laboratory Director requested that all Division Directors and Department Heads review the laser control areas and laser use within their organizations (see Attachment 3).

**Electrical Safety** – Two assessments of the ANL-E electrical safety program have been completed and we continue to address the identified opportunities for improving our program. The recent arc-blast accident at SLAC serves as an important reminder that continued management attention is needed to enhance our electrical safety program so that employees and contractors are properly protected from electrical hazards.

# ESH/QA Event Quarterly Performance Analysis Report

## Argonne National Laboratory – East

### October 29, 2004

#### Background

The revised DOE ORPS Program was implemented at ANL on November 23, 2003. The revised system is intended to reduce nuisance reporting, clarify confusing reporting criteria, and place a new emphasis on periodic performance analysis.

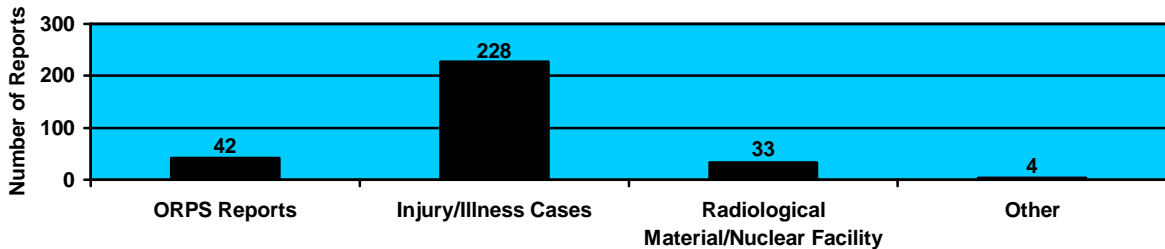
The purpose of the performance analysis is to ensure that recurring events are identified. Guidance concerning the identification and reporting of recurring events is provided in DOE Guide 231.1-1, *Occurrence Reporting and Performance Analysis Guide*. Events identified as recurring will be processed as a significance category “R” recurring occurrence report.

At ANL-E performance analysis is conducted quarterly and includes a review of ORPS and non-ORPS events/issues which have occurred during the previous 12-month period. The goal of the ORPS Quarterly Performance Analysis is to identify opportunities to improve ESH/QA performance and identify recurring/programmatic issues for further evaluation.

#### Incidents and Events Reviewed

Figure 1 presents the 307 incidents and events distributed by types of incident/event that were included in this performance analysis. It should be noted that for this quarterly performance analysis the ORPS Reportable events for a two year period were included as an attempt to increase the size of the data set to facilitate analysis.

Figure 1 - Number of Incidents/Events Reviewed by Type



## ORPS Report Review and Analysis

### *Number of ORPS Reports Submitted per Quarter*

Figure 2 presents the distribution of the number of ORPS reports submitted by quarter for the period of October 1, 2002 to September 30, 2004. For the period, 42 ORPS reports were submitted and averaged of 5.25 reports per quarter.

**Figure 2 - Number of ORPS Reports per Quarter**

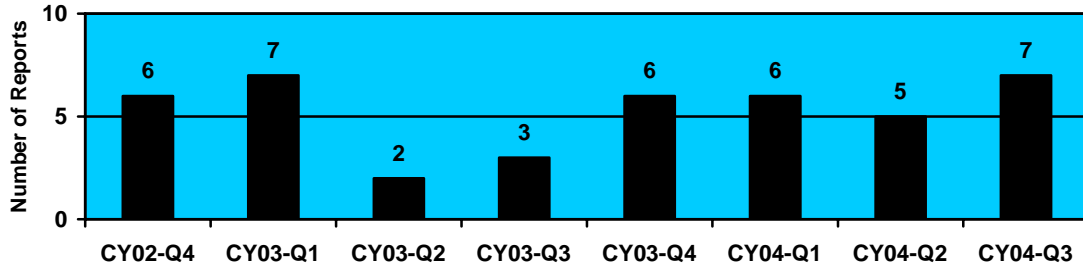


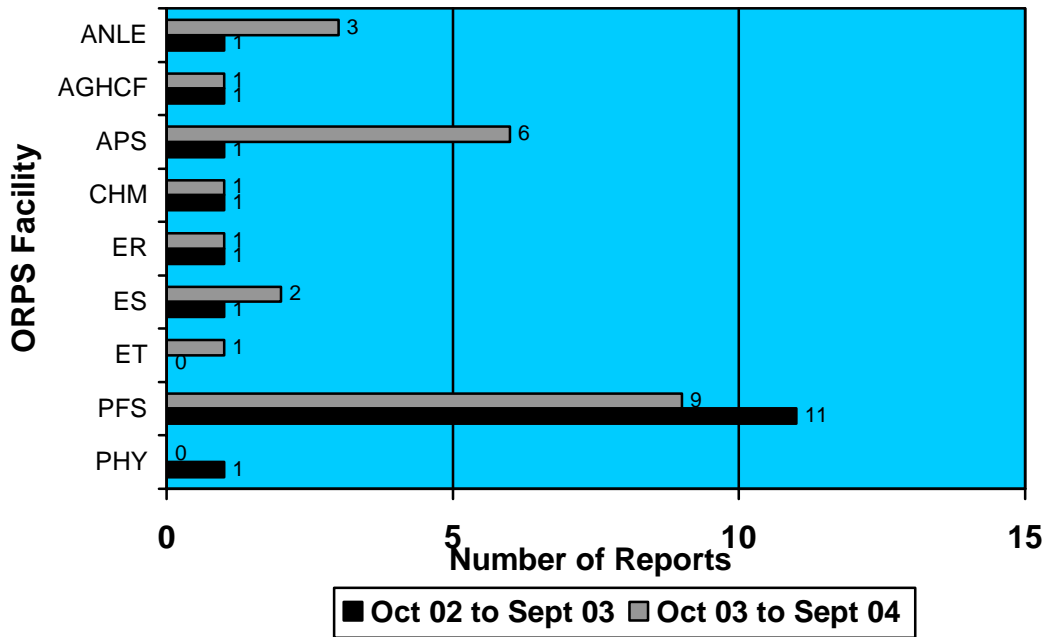
Figure 2 indicates the number of reportable occurrences increased 33% from FY 2003 to FY 2004. The increase is believed to be due to the change in ORPS reportability criteria. The increase may also be due to improved Facility Manager understanding of ORPS reportability criteria as a result of the new ORPS training provided in October and November 2003.

**Conclusion:** The above review of the number of ORPS reportable events by quarter did not identify any noteworthy trends or recurring events.

### *ORPS Reports by Facility*

Figure 3 shows the distribution of ORPS reports by Facility for the twelve month periods of October 1, 2002 to September 30, 2003 and October 1, 2003 to September 30, 2004.

**Figure 3 - ORPS Reports per Facility**



The increase in ORPS reports for the APS facility from 1 to 6 was reviewed further. The six ORPS reportable events involved:

- Two events related to equipment failures;
- One event related to identification of a Suspect/Counterfeit Item ;
- One event involving improper labeling of a shipping container;
- One event involved incorrect installation of equipment; and
- One event involving a eye injury due to a laser beam

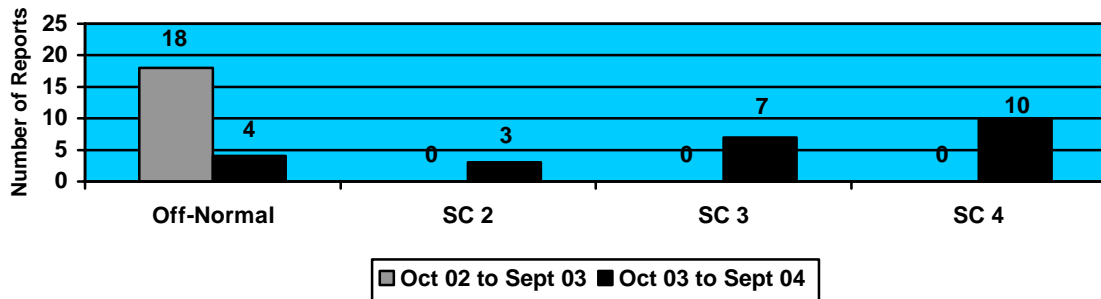
The analysis of the APS ORPS reportable events did not identify any noteworthy trends or recurring events.

**Conclusion:** The review of the number of ORPS reportable events by Facility did not identify any noteworthy trends or recurring events.

*ORPS Reports by Occurrence Category*

Figure 4 shows the distribution of ORPS reportable events by Occurrence/Significance Category for the periods October 2002 to September 2003 and October 2003 to September 2004.

**Figure 4 - ORPS Reports per Occurrence/Significance Category**



For the ten month period following the implementation of the new ORPS significance category, fifty percent of the ORPS reportable events were Significance Category 4.

**Conclusion:** The review of the distribution of ORPS reportable events by Occurrence/Significance Category did not identify any noteworthy trends or recurring events.

*ORPS Report by Nature of Occurrence & Reporting Criteria*

Figure 5 shows the distribution of ORPS reportable events by Nature of Occurrence and Reporting Criteria for the periods October 2002 to September 2003 and October 2003 to September 2004.

**Figure 5 – ORPS Reports per Nature of Occurrence and Reporting Criteria**

Nature of Occurrence	Criteria	Oct. 1, 2002 to Sept. 30, 2003	Oct. 1, 2003 to Sept. 30, 2004
01 - Facility Condition & 4 – Facility Status & 6 – Contamination/Radiation Control	01D – Loss of Control of Rad Material & 6B(3) & 6B(4)	1	4
	01E – Safety Structure/System/Component Degradation	1	0
	01H – Operations & 4B Operations	0	4
	4C(2) – SC/I	0	2



Nature of Occurrence	Criteria	Oct. 1, 2002 to Sept. 30, 2003	Oct. 1, 2003 to Sept. 30, 2004
02 – Environmental & <b>5 - Environmental</b>	02E – Environmental Agreement/compliances Activities	1	0
	<b>5A - Releases</b>	0	1
03 – Personnel Safety & <b>2 – Personnel Safety &amp; Health</b>	03A – Occupational Illness/Injuries	1	0
	03C – Safety Concerns	0	1
	<b>2A(4)</b> – Personnel Exposure to Chemical, Biological or Physical hazards above limits	0	1
	<b>2A(6)</b> – Any single occurrence resulting in serious injury/illness	0	1
	<b>2C(1)</b> – Failure to follow prescribed hazardous energy control processes or disturbance of a energized source	0	1
	<b>2C(2)</b> – Failure to follow prescribed hazardous energy control processes or identification of an unexpected energized source	0	1
04 – Personnel Radiological Protection	04B – Personnel Contamination & 6D Personnel Contamination	8	1
07 – Value Basis Reporting	07A – Cost Based Occurrences	0	1
	07B – Defective Item, Material or Service	0	1
<b>8 - Transportation</b>	<b>8(2)</b> – Any offsite transport of hazardous material where the receiving organization initiates corrective action	0	2
	<b>8(3)</b> – Any onsite transport of hazard material where the receiving organization’s operations are disrupted	0	1
10 – Cross Category Items	10B – Near Miss Occurrences & <b>10(2)</b>	1	2
	10C – Potential Concerns/Issues & <b>10(2)</b>	5	2
Totals		18	24

**BOLD indicates new ORPS criteria effective December 1, 2003**

For the ten month period following the implementation of the new ORPS reporting criteria, fifty percent of the ORPS reportable events were Significance Category 4.

The review of ORPS Reportable events involving radiological and /or nuclear facilities was conducted using the PAAA review process and the results are provided in that section of this report.

**Conclusion:** The review of ORPS reportable events (excluding radiological material and nuclear facilities) by Occurrence and Reporting Criteria did not identify any noteworthy trends or recurring events.

*Distribution by Event Cause*

Figure 6 shows the distribution of ORPS reportable events by direct, contributing, apparent and/or root causes for the periods October 2002 to September 2003 and October 2003 to September 2004

**Figure 6 – Distribution of ORPS Reportable Event Causes**

<b>Event Cause</b>	<b>October 1, 2002 to September 30, 2003</b>	<b>October 1, 2003 to September 30, 2004</b>
Equipment/Material Problem & <b>A2</b> <b>Equipment/material Problem</b>	5	3
Procedure Problem	9	1
Personnel Error & <b>A3 – Human Performance LTA</b>	16	9
Design Problem & <b>A1 - Design/Engineering Problem</b>	6	3
Training Deficiency & <b>A6 – Training Deficiency</b>	3	1
Management Problem & <b>A4 – Management Problem</b>	7	13
<b>A5 – Communications LTA</b>	0	5
External Phenomena	0	1
Radiological/Hazardous Material Problem	9	3

**BOLD indicates new ORPS Cause Codes effective December 1, 2003**

The review of ORPS reportable events by causes resulted in the following two observations:

- The number of procedure problems was reduced from 9 to 1. The reduction may be due to improved procedures or may be due to implementation of the new ORPS system. It was not possible to determine exactly why this reduction occurred.

- The number of events caused by personnel error and human performance less than adequate was reduced from 16 to 9 and those caused by a management problem increased from 7 to 13. The change in the number of events having causes related to personnel error and management problem may be due to improved understanding of causes as a result of the new ORPS system training provided to facility managers.

**Conclusion:** The review of ORPS reportable events by causes did not identify any noteworthy trends or recurring events.

### Injury/Illness Cases

For the period October 1, 2003 to September 30, 2004 there were 228 cases reported to the Medical Department. Of the 228 cases, two cases were submitted into ORPS, for 17 cases disposition is pending further evaluation, 17 are no-injury cases, and 43 are non-occupational injury/illnesses. This review examined the first aid and OSHA recordable cases.

#### *Organization Injury/Illness Cases*

Figures 7 and 8 summarize the injuries and illness first aid and OSHA Recordable case distribution by ANL-E Organization for September 2004 and the period of October 1, 2003 to September 30, 2004.

**Figure 7 - New Cases for September 2004**

Case Type	APS	COO	EEST	ER	OTD	PBCS	Total
First Aid (reported)	0	3	2	2	0	1	8
DART	0	0	0	0	0	0	0
Days Away	0	0	0	0	0	0	0
Medical Treatment	1	0	0	0	0	1	2
<b>Total OSHA Recordable Cases</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>2</b>

**Figure 8 - Total Cases for October 1, 2003 to September 30, 2004**

Case Type	APS	COO	EEST	ER	OTD	PBCS	Total
First Aid (reported)	8	45	6	13	2	19	93
DART	2	10	1	1	0	5	19
Days Away	1	3	0	1	0	3	8
Medical Treatment	5	10	5	2	1	9	32
<b>Total OSHA Recordable Cases</b>	<b>7</b>	<b>20</b>	<b>6</b>	<b>3</b>	<b>1</b>	<b>14</b>	<b>51</b>

**Conclusion:** The review of first aid cases and OSHA Recordable cases by organization did not identify any noteworthy trends or recurring events.

*Body Part and Cause*

Figure 9 presents the first aid and OSHA Recordable cases distributed by body part and action/cause of the injury/illness. It is important to note that for some actions/causes, multiple body parts may have been injured.

**Figure 9 – Distribution of Body Part Involved by Action/Cause of injury/Illness**

Body Part	Action/Cause							Totals
	Fall/Slip	Overexertion or Strain	Repetitive Motion	Struck by or Struck against	Caught between	Contact with chemical, irritant, or physical hazard	Insect	
Head/Neck	2	0	0	10	0	1	5	18
Face	0	0	0	1	0	1	2	4
Eye	0	0	0	10	0	0	0	10
Respiratory Tract	0	0	0	0	0	3	0	3
Back	2	6	0	0	0	0	0	8
Trunk/Shoulder	5	5	0	2	0	1	0	13
Arm/Elbow	0	1	1	3	0	2	4	11
Wrist	3	2	5	0	0	0	0	10
Hand	1	1	1	7	2	4	1	17
Thumb/Finger	0	0	4	29	4	1	1	39
Leg/Hip	1	3	0	1	0	0	0	5
Knee	7	0	0	0	0	0	0	7
Ankle	4	0	0	0	0	0	0	4
Foot	1	0	0	1	0	0	0	2
Toe	0	0	0	2	0	0	0	2
<b>Totals</b>	<b>26</b>	<b>18</b>	<b>11</b>	<b>66</b>	<b>6</b>	<b>13</b>	<b>13</b>	<b>153</b>

Additional review/analysis was conducted for injuries involving the eye and the following observations were noted:

- 5 cases involved materials getting into the eye (4 cases were dust and one case was a piece of metal)
- 4 cases involved the eye being struck by an object. Of the 4 cases 2 involved the eye being struck by the bow of the employees safety glasses during donning, one case involved the eye being struck by a box while the employee was bending down, and the remaining case the employee’s eye was struck by an envelope the employee was holding.
- One case involved improper use of eye protection which resulted in a laser eye injury

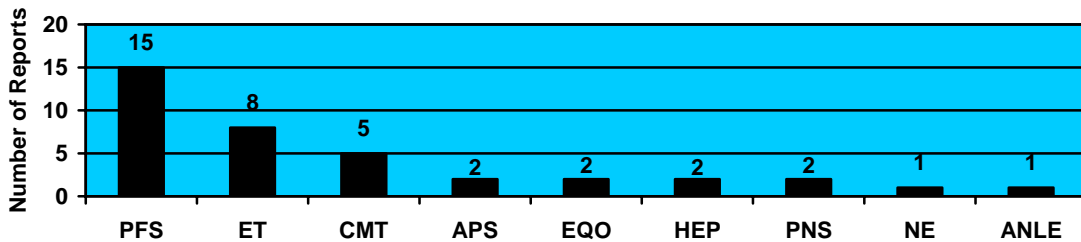
The 56 hand and finger injuries reported during the twelve month period account for approximately 37% of the total injuries reviewed. Published industry data reports 33% of work place injuries involve the hands, therefore the number of hand and finger injuries at ANL-E is consistent with industry experience. Recognizing that more needs to be done, EQO distributed a memorandum (see Attachment 2) to all employees to increase awareness of hand hazards and control measures that may be implemented. Also, EQO has distributed to all official site bulletin boards a poster containing injury and personal protective equipment information (see Attachment 3).

**Conclusion:** The review and analysis of injury/illness cases by ANL-E organization, body part involved and action/cause did not identify any noteworthy trends or recurring events.

### Radiological and Nuclear Facility Events

Figure 10 presents the radiological and nuclear facility events by division for the period October 1, 2003 to September 30, 2004.

**Figure 10 – Radiological and Nuclear Facility Event Reports by Division**



During FY2004 there were 33 issues captured in the PAAA screening and review process. Seventeen issues are completely through the process to disposition. Fifteen issues are in-process with ongoing investigation or information gathering, ten of which have not had a screening completed. Significant investigation and root cause analysis were conducted by the alternate PAAA Coordinators for; two issues dealing with fire protection design and installation, an issue dealing with processing health physics instruments for disposal, and an issue dealing with MC&A processes. In descending order the following divisions were associated with the PAAA issues in FY04: PFS (15, twelve associated with WMO), ET (8), CMT (5), APS, EQO, HEP, and PNS (All 2 each), NE (1) and ANL-E as a site wide issue (1).

**Conclusion:** In July 2004, DOE-ASO and EQO ESH/QA professionals reviewed the previous fifteen months of incidents for trends and recurrence reportability. As a result of the July meeting, additional evaluation was conducted and a grouping of three events was determined to be NTS reportable (re: NTS Report # NTS-CH-AA-ANLE-ANLE-2004-0003, 09/21/04).

### **Other Incidents/Events Reviewed**

Four other events were reviewed:

- Concrete falling from a High Bay Ceiling – A researcher noticed small concrete fragments on the floor near his experimental equipment and notified supervision. A structural engineer determined that the concrete had fallen from an area that had water damage repaired several years ago. A small amount of additional loose concrete was removed from the ceiling.
- Researchers reconfigured a laser in a Laser Control Area without proper authorization. Event investigators determined that the researchers were working safely during the alignment of the laser. However, when the researchers put the laser at higher power, the proper controls were not fully implemented. The researchers intended to prepare the necessary documentation after the laser setup was complete.
- A small water leak was discovered in an analytical laboratory. The water purification system was turned off and the leak stopped. A service repairman determined that a failed power supply resulted in a loss of pressure to the system. The loss of pressure may have been the cause of the small water leak.
- Preliminary results from a review of work controls during a renovation project indicate that opportunities may exist for improving work planning, hazard identification and analysis, and implementation of control measures. The review is on-going at this time and when the review is completed results will be evaluated.

Reconfiguring the laser without proper authorization coupled with a laser eye injury (ORPS Report #CH-AA-ANLE-ANLEAPS-2004-0003) indicates that continued management attention is needed to enhance laser safety. In September, the Laboratory Director requested that all Division Directors and Department Heads review laser control areas and laser use within their organizations (see Attachment 1).

**Conclusion:** The review and analysis of the above other events identified one trend that needs continued management attention. This trend is not considered to be an ORPS reportable recurring event.

## **Summary**

The review and performance analysis of 307 incidents/events resulted in the identification of one trend that needs continued management attention and no recurring events that require reporting into ORPS. In addition, the routine trending and analysis of radiological material and nuclear facility events resulted in the submittal of an NTS report on September 19, 2004.

# ARGONNE NATIONAL LABORATORY

INTRA-LABORATORY MEMO

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September 27, 2004

TO: Division Directors/Department Heads

FROM: Hermann A. Grunder

SUBJECT: **Investigation Report from LASER Safety Occurrence**

This week, we had an occurrence in which the eyes of a researcher at APS were damaged by a Class 4 LASER. Fortunately, the injury does not appear to be serious and the damage appears to be temporary. As the line manager responsible, Murray Gibson ensured that the APS conducted a thorough incident investigation; the team included Bruce Murdoch, the LASER Safety Officer for the site. I am attaching a copy of the preliminary report for your information as the investigation is still on-going.

The injury was directly caused by inattention to detail on the part of the researcher; however, we use the event to check potential gaps in our program.

I want each of you who have Class 3 or 4 LASER operations to:

- Confirm that each LASER Control Area (LCA) has an assigned LCA Supervisor who understands his/her responsibilities;
- Confirm that all LCA Supervisors are formally appointed as such (i.e., a memo from you to the LCA Supervisor, a revised PD, and a correct JHQ);
- Identify any Class 3 or 4 LASER operations for which the LCA Supervisor is also the experimenter and consider whether appointment of a different LCA Supervisor would be appropriate.

Like you, I am disappointed that this incident happened, but I am very proud of our ISM program. I trust that we will take this opportunity to learn from our mistakes.

If you have any questions about this request, please call me directly.

Attachment



# ARGONNE NATIONAL LABORATORY

INTRA-LABORATORY MEMO



Advanced Photon Source

September 26, 2004

**To:** J.M. Gibson Associate Laboratory Director - APS

**From:** R.D. Hislop APS ESH/QA Representative

**Subject: Preliminary APS Laser Incident Investigation**

On Friday, September 17, 2004 while aligning a Class 4 Ti:Sapphire laser, an APS PhD research physicist (PI) received a retinal burn to his left eye when he raised his laser safety eyewear from his face to rub his left eye. The PI was adjusting a polarizer/beam splitter/attenuator, which can produce a beam at right angles to the direction of the main beam path and can result in beam leaving the plane of the optics table. During the process of doing this work the PI sensed an irritation in his left eye from an existing mild eye infection. He turned away from the alignment table, lifted his laser safety eyewear to rub the irritation, and sensed a bright flash. He later noted cloudiness in the vision of his left eye. From this, we conclude that the beam splitter was adjusted such that it resulted in stray beams leaving the table.

Protective eyewear must be worn at all times in a laser controlled area (LCA) when the laser is operating. Removal of his safety glasses to rub his eye while in the presence of an operating laser is a serious breach of safe work practices that an individual with his experience and knowledge should have recognized. The PI explained that the removal of his laser safety eyewear while in a laser laboratory with an energized laser was the result of fatigue. The removal of the protective eyewear is the direct cause of the injury.

The splitter ports were not shielded after the adjustments were made. The PI explained that his failure to shield the splitter ports was due to his focused attention on the attenuation capability of the splitter device and that he had overlooked its splitter feature. A revision to the standard operating procedure (SOP) for this LCA had been submitted to the ANL Laser Safety Officer (LSO) and returned with comments in anticipation of an evaluation of the set-up after the lasers were repaired. Although not specifically required in this case, a review by the LSO of the optics table after initial alignment and before the introduction of laser beam on the table in its new configuration could have identified the oversight of the unshielded splitter beam ports. Had the PI covered the splitter ports, the impact of these stray beams would have been prevented.

Tools in an LCA should have a non-reflective/matte finish to minimize specular reflections, and tools should not be maintained on the optics table during laser use. Inspection of the optics table following the occurrence revealed tweezers and tools with reflective finishes and a compressed air container with chrome trim. The PI explained that the condition of his optics table was also the result of fatigue. The presence of reflective tools on the optics table is an indication of poor practices and could have been a contributing factor to this event.

Each LCA should have an assigned Laser Controlled Area Supervisor (LCAS). The LCAS for the lab in question left ANL in November 2003, and no replacement LCAS was appointed. Further, no notice of his departure was communicated to the LSO. While a Lab Safety Captain (LSC) was immediately appointed for the lab, the duties assigned this individual did not specifically include LCAS responsibilities. The lack of an assigned LCAS was not a direct cause but may have been a contributing factor to this incident.

The PI did not immediately report the incident due to his initial self-denial that he had made a mistake that could have hurt him and since he did not feel that he had been hurt. It wasn't until the next morning, Saturday September 18<sup>th</sup> after he subsequently noticed a light cloudiness in the vision of his left eye that he reported the incident by leaving a message on his group leader's work voice mail. The delay had no impact on the severity of the incident, but it is a violation of ANL procedures.

**Medical Diagnosis** - When line management learned of the incident the PI was immediately sent to the ANL Medical Department for evaluation. He was referred to LaGrange Hospital, where an ophthalmologist identified a lesion to the PI's retina, some distance removed from the area of his optic nerve. The ophthalmologist also detected temporary vitreous floaters in the eye accounting for the light cloudiness in the PI's vision. As the result of this diagnosis the PI was then scheduled a more detailed retinal evaluation at the Hinsdale Hospital. A final diagnosis and prognosis will be prepared by the ANL Medical Department when all the ophthalmologist reports are received.

#### **Follow-on Actions**

The eye injury described in this report was due to the failure of proper vigilance being paid to the control of recognized safety hazards on the optic table and the PI's failure to maintain his laser safety eyewear in place while in a laser controlled area. Further, other process violation occurred that contributed to this incident.

All laser operations at APS were immediately suspended when the incident was communicated to management with restart following a LSO review of each laser control area and their respective SOP. Similar actions were undertaken by ANL as a whole after we reported the incident.

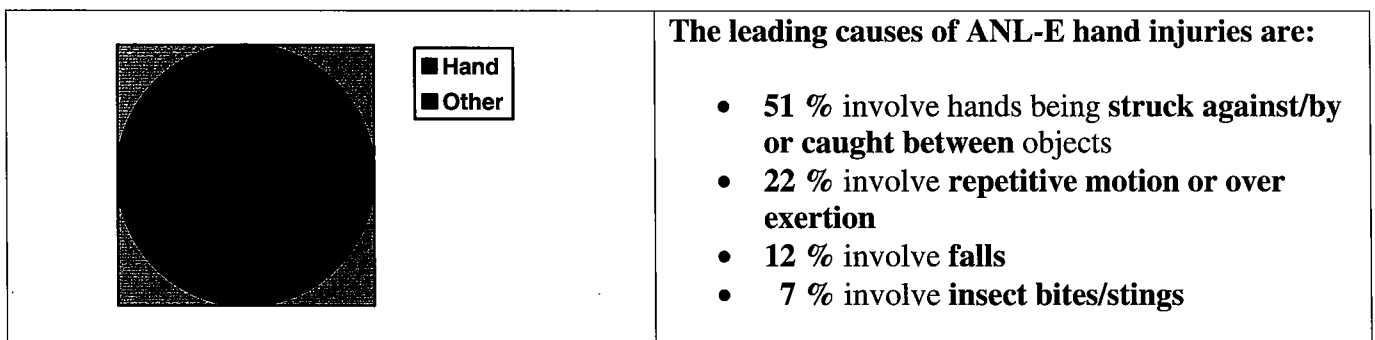
I will be conducting a formal causal analysis of this incident to determine any other corrective actions that we should take. I will forward the final investigation report along with those additional actions to you.

cc: A. Cohen  
R. Gerig  
E. Gluskin  
D. Mills  
W. Ruzicka

**DATE:** April 2, 2004  
**TO:** All ANL-E Employees  
**FROM:** Adam Cohen  
**SUBJECT:** Hand Safety

There were six OSHA Recordable injuries in March and five of them involved the hand. While we are still evaluating the specific incidents and determining if any trends exist, it is worth reminding everyone that our goal is to have zero injuries and to stress some specifics related to hand injuries.

Your hands are one of the most important tools you possess. Over a quarter of a million people in the U.S. suffer a serious hand injury each year. Recognizing hand hazards and implementing the proper controls will protect your hands from injury and yourself from unnecessary disability. A review of 213 injuries at ANL-E, including first aid cases and OSHA recordables, reported to HR-Medical during the past 12 months shows:



To recognize hand hazards there are many resources and processes available to us, including:

- **Training** – ESH 159 “Hand Safety” is a computer based training course and EQO-Training has nine videos; the videos and training cover some basic concepts of hand safety
- **Job planning** should include selecting the correct procedure and proper equipment, including PPE, to be used. All planning should be reviewed with your supervisor, and others, such as the ES&H Coordinator or Subject Matter Experts, should be consulted as necessary.
- **Hazard identification** – inspect your work area and look for sharp edges, unstable objects, jewelry and loose clothing, unprotected moving parts, chemicals, temperature extremes, electrical hazards, and constant or repetitive motions. EQO-IH can assist in ergonomic evaluations
- **Control measures** – cover sharp edges with a protective barrier; secure objects that may fall; remove jewelry and loose clothing; use push-sticks, guards and other protective devices to maintain distance from moving parts; use gloves and other appropriate personal protective equipment; select the proper hand tool; use proper body positioning; and use lockout/tagout to de-energize equipment. EQO-IH can assist in selecting appropriate controls, including personal protective equipment.

Injuries are preventable and working together we can eliminate all injuries. Remember no job is so important that it cannot be done safely. By actively participating in training, job planning, consulting experts, identifying hazards and implementing control measures we can achieve our goal of Zero injuries.

# Ready to Work?



## Statistics

ANL Injuries to Date - 7.30.04

	Injury	Number of Cases
①	Head	2
②	Face / Eye	7
③	Back	4
④	Shoulder / Arm / Elbow	8
⑤	Wrist	9
⑥	Finger / Thumb / Hand	13
⑦	Leg / Hip / Knee	5
⑧	Toe	2
⑨	Insect bite	5



## Prevention

The most important gear that you bring to work is your attitude and your awareness. As obvious as it may seem, recognizing what could hurt you and acting to protect yourself from unsafe activities and devices are central to your safety.

- ① Use hard hats to protect yourself from head impact or penetration injuries from falling objects.
- ② Wear spectacles, goggles, and face shields as protection from flying fragments, large chips, sparks, optical radiation, molten metals, chemicals, dust, and glare.
- ③ Use proper lifting techniques and equipment on the job.
- ④ Use proper climbing and lifting techniques. Ensure proper use of tools and climbing apparatus.
- ⑤ Use proper posture at the computer, take frequent breaks, exercise the wrist to avoid strain.
- ⑥ Wear gloves to protect yourself from harmful substances through skin absorption, severe cuts, abrasions, chemical and thermal burns, harmful temperature extremes.
- ⑦ Pay attention to working surfaces to avoid twists, sprains, and falls.
- ⑧ Wear foot guards, leggings and safety shoes to guard against rolling, falling or sharp objects, wet and slippery surfaces, and electrical hazards.
- ⑨ Wear insect repellent, long sleeves and pant legs.

**PPE should be your last line of defense** after process change, engineering, and administrative controls. PPE does not eliminate the hazard, but when properly used it provides additional protection.