



Department of Energy
Washington, DC 20585

April 30, 2009

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

Dr. Robert Rosner
President, UChicago Argonne, LLC
Director, Argonne National Laboratory
9700 South Cass Avenue
Argonne, Illinois 60439

WEA-2009-04

Dear Dr. Rosner:

This letter refers to the U.S. Department of Energy's (DOE) Office of Health, Safety and Security's Office of Enforcement investigation into the facts and circumstances surrounding the March 3, 2008, incident at the Argonne National Laboratory (ANL) that resulted in the release of arsenic oxide into a laboratory room, and the March 11, 2008, incident that resulted in an overexposure of a laboratory researcher to carbon monoxide. The results of the on-site investigation were provided to UChicago Argonne, LLC (UChicago Argonne) in an Investigation Report dated November 25, 2008. An enforcement conference was held on January 9, 2009, with you, senior management of the University of Chicago, and members of your staff to discuss the report's findings and UChicago Argonne's corrective action plans. A summary of the enforcement conference is enclosed.

Based on our evaluation of the evidence in this matter, including information presented during the enforcement conference, DOE has concluded that violations of 10 C.F.R. Part 851, *Worker Safety and Health Program*, by UChicago Argonne have occurred. Accordingly, DOE is issuing the enclosed Preliminary Notice of Violation (PNOV) with four Severity Level I violations and a proposed civil penalty of \$280,000.

Both incidents are highly significant because of the serious health consequences that could have and did occur, and each incident illustrated broad deficiencies in implementing the experiment safety review process within ANL's Materials Science Division (MSD). The experiment safety review is the primary mechanism established by ANL to identify and analyze hazards and ensure that

proper work controls are implemented to mitigate those hazards. UChicago Argonne failed to perform an adequate review prior to the start of either experiment, resulting in a lack of sufficient hazard controls for these activities, including containment devices, warning signs, monitoring devices, operating procedures, and worker training. The failure within MSD to understand the importance of an experiment safety review for these work activities represented a basic lack of attention to the hazards associated with these experiments and the need to protect employees during the conduct of hazardous activities. Further, UChicago Argonne failed to perform effective management control and oversight of MSD activities to ensure development and implementation of an experiment safety review process that complies with applicable ANL and regulatory requirements for hazard identification, assessment, and abatement.

DOE considers several factors when evaluating opportunities for mitigation of penalties in enforcement actions, including the timeliness and comprehensiveness of reporting, investigation, and corrective actions in response to events and conditions, as well as contractor programs for self-identifying and correcting noncompliances to prevent events from occurring. DOE acknowledges that UChicago Argonne stopped all experimental operations within MSD after the second of the two events, and took action to ensure that experimental activities would not resume until appropriate safety reviews were completed and work was formally authorized to restart. However, the arsenic and carbon monoxide events and noncompliances were not reported into DOE's Noncompliance Tracking System (NTS) in a timely manner. Furthermore, UChicago Argonne's initial investigation into each event was too narrowly focused on the specific conditions within MSD that triggered these events. Thus, following DOE Argonne Site Office feedback, laboratory management directed a second set of reviews to identify all of the causal factors and assess the extent of similar conditions across the laboratory. Consequently, DOE was not provided a full set of corrective actions until January 2009, approximately 10 months after the date of the incidents.

UChicago Argonne also had several prior missed opportunities to address issues associated with implementation of the experiment safety review process. In July 2007, MSD identified deficiencies in the experiment safety review process but failed to undertake timely and effective measures to correct those deficiencies. In 2006, UChicago Argonne committed to corrective actions in response to DOE's nuclear safety enforcement action at ANL that are very similar to those taken and planned for these events. The Office of Enforcement is very concerned that UChicago Argonne's previous actions were not effective in precluding the experiment safety review process breakdowns that occurred within MSD. As a result of these deficiencies in reporting, investigation, and corrective action timeliness and effectiveness, no mitigation of the proposed civil penalty has been provided. Further, no mitigation has been provided for self-identification of the noncompliances due to the self-disclosing nature of both events.

Pursuant to 10 C.F.R. § 851.42, *Preliminary Notice of Violation*, you are obligated to submit a written reply within 30 calendar days of receipt of the enclosed PNOV, and to follow the instructions specified in the PNOV when preparing your response. If no reply is submitted within 30 days, in accordance with 10 C.F.R. § 851.42(d)(2), this PNOV will constitute a final order. After reviewing your response to the PNOV, including any proposed additional corrective actions entered into NTS, DOE will determine whether further action is necessary to ensure compliance with worker safety and health requirements. DOE will continue to monitor the completion of corrective actions until these matters are resolved.

Sincerely,



John S. Boulden III
Acting Director
Office of Enforcement
Office of Health, Safety and Security

Enclosure

cc: Patricia Dehmer, SC-1
Ronald Lutha, ASO
Steve Richardson, ANL
Stuart Meredith, ANL
Richard Azzaro, DNFSB

Preliminary Notice of Violation

UChicago Argonne, LLC
Argonne National Laboratory

WEA-2009-04

As a result of the U.S. Department of Energy's (DOE) investigation into the facts and circumstances associated with the March 3, 2008, incident that resulted in the release of arsenic oxide into a laboratory room, and the March 11, 2008, incident that resulted in a laboratory researcher's overexposure to carbon monoxide at the Argonne National Laboratory (ANL), multiple violations of DOE worker safety and health requirements by UChicago Argonne, LLC (UChicago Argonne) were identified. The violations involved deficiencies in hazard identification and assessment; hazard prevention and abatement; training and information; and adherence to general requirements and procedures.

DOE grouped and categorized these deficiencies as four Severity Level I violations. The total proposed civil penalty is \$280,000. In accordance with 10 C.F.R. Part 851, Appendix B, *General Statement of Enforcement Policy*, the violations are listed below.

VIOLATIONS

I. Hazard Identification and Assessment

Title 10 C.F.R. § 851.21, *Hazard identification and assessment*, states that “[c]ontractors must establish procedures to identify existing and potential workplace hazards and assess the risk of associated workers injury and illness.” These procedures “must include methods to: (1) [a]ssess worker exposure to chemical, physical, biological, or safety workplace hazards through appropriate workplace monitoring; (5) [e]valuate operations, procedures, and facilities to identify workplace hazards; [and] (6) [p]erform routine job activity-level hazard analyses.” In accordance with this section, contractors “must perform [these activities] initially to obtain baseline information and as often thereafter as necessary to ensure compliance with [these requirements].”

Title 10 C.F.R. § 851.24, *Functional areas*, requires that “[c]ontractors must have a structured approach to their worker safety and health program” and that in implementing the structured approach, “[c]ontractors must comply with the applicable standards and provisions in [A]ppendix A of [Part 851], entitled ‘Worker Safety and Health Functional Areas.’” Appendix A, Section 2, *Fire Protection*, states that “[c]ontractors must implement a comprehensive fire safety and emergency response program to protect workers commensurate with the nature of the work that is performed,” and that “[a]n acceptable fire protection program...includes meeting

applicable building codes and National Fire Protection Association [NFPA] codes and standards.”

NFPA 45, *Standard on Fire Protection for Laboratories Using Chemicals*, 2004 edition, establishes the following provisions for laboratory operations involving hazardous chemicals:

- Section 12.1.1.1 states that “[b]efore laboratory tests or chemical reactions are begun, evaluations shall be made for hazards that can be encountered or generated during the course of the work.”
- Section 12.1.1.2 states that “[e]valuations shall include the hazards associated with the properties and reactivity of the materials used and any intermediate and end products that can be formed, hazards associated with the operation of the equipment at the operating conditions, and hazards associated with the proposed reactions – for example, oxidation and polymerization.”
- Section 12.1.1.3 requires that “[r]egular reviews of laboratory operations and procedures shall be conducted with special attention given to any change in materials, operations, or personnel.”

Contrary to these requirements, UChicago Argonne failed to adequately evaluate experimental procedures involving arsenic and carbon monoxide (CO) to identify and assess the hazards. Specific examples are listed below:

- A. The ANL Materials Science Division (MSD) did not develop and implement an experiment safety review for the material synthesis work involving the use of arsenic or for the experimental procedures using CO. Section 21.2, *Experiment Safety Review* (dated March 12, 2007), of the ANL Environment, Safety and Health (ESH) Manual¹ requires each division conducting experimental activities to establish and maintain an experiment safety review process to identify and control workplace hazards. A draft experiment safety review for materials synthesis, dated September 27, 2007, was developed but was not approved by the MSD Director and MSD Safety Review Committee as required by the applicable experiment safety review implementing procedures. The draft form also did not reflect the use of carcinogens, including arsenic. For the experimental procedures using CO, a draft document, *Safety Analysis and Standard Operating Procedures*, dated September 10, 2007, identified the inhalation and flammability hazards associated with CO. However, the document was deficient in that it was not developed in accordance with the experiment safety review process; failed to address the operations involving the use of CO in an unsealed glove bag; and was not reviewed or approved by the appropriate MSD management.

¹ The Argonne National Laboratory Worker Safety and Health Program/Integrated Safety Management System Description (Rev. 1 – February 20, 2008) describes the policies and procedures that comprise the functional Worker Safety and Health Program at ANL in compliance with 10 C.F.R. Part 851 requirements and incorporates the implementation requirements contained in the *Argonne National Laboratory Environment, Safety and Health Manual* (latest revision).

B. UChicago Argonne did not identify the following hazards and precautions associated with arsenic:

- Classification as a select carcinogen²
- Keep away from heat
- A sublimation temperature of 615 degrees Celsius (1139 degrees Fahrenheit)

UChicago Argonne did not identify the exothermic reaction and pressure hazard or assess the risk associated with heating arsenic in sealed ampoules above its sublimation temperature. In addition, UChicago Argonne did not evaluate the ampoule used in the experiment for its ability to contain the pressure associated with arsenic at the planned temperature.

C. UChicago Argonne did not evaluate and assess the potential for worker exposure to CO under the experimental conditions to ensure that exposures would be maintained below the regulatory action level. Section 4.2, *Chemical Hygiene Plan* (dated June 7, 2004), of the ANL ESH Manual requires line supervisors to evaluate, with the assistance of an industrial hygienist, the potential for employee exposure to hazardous chemicals and to document the evaluations. Section 4.3, *Laboratory and Chemical Safety* (dated August 13, 2007), of the ANL ESH Manual provides criteria for workplace monitoring, including regulatory requirements, the nature of the operation, toxicity and physical properties of the material involved, existing engineering controls, and experience with similar operations. Section 4.3 also requires the Division Director to ensure that information is provided to ANL industrial hygiene staff about the chemicals and amounts used, as well as the manner and frequency of their usage. UChicago Argonne did not conduct workplace monitoring, provide information to industrial hygiene staff, or evaluate the potential for employee exposure consistent with these requirements.

Collectively, these deficiencies constitute a Severity Level I violation. As explained in Part 851, appendix B, section VI(b)(1), “[a] Severity Level I violation is a serious violation. A serious violation shall be deemed to exist in a place of employment if there is a potential that death or serious physical harm could result from a condition which exists, or from one or more practices, means, methods, operations, or processes which have been adopted or are in use, in such place of employment.”

Proposed Civil Penalty - \$70,000

II. Hazard Prevention and Abatement

Title 10 C.F.R. § 851.22, *Hazard prevention and abatement*, requires contractors to “establish and implement a hazard prevention and abatement process to ensure that all identified and potential hazards are prevented or abated in a timely manner.” Under this section, “(1) [f]or hazards identified...during the development of procedures, controls must be incorporated in the appropriate...procedure” and “(2) [f]or existing hazards identified in the workplace, contractors must: (iii) [p]rotect workers from dangerous safety and health conditions.”

² See 29 C.F.R. § 1910.1450(b) for the definition of a *select carcinogen*.

Title 10 C.F.R. § 851.23, *Safety and health standards*, requires compliance with 29 C.F.R. Part 1910, *Occupational Safety and Health Standards*, which includes § 1910.1450, *Occupational Exposure to Hazardous Chemicals in Laboratories*. Section 1910.1450(e) requires that “the employer shall develop and carry out the provisions of a written Chemical Hygiene Plan” and that the plan “shall include each of the following elements and shall indicate specific measures that the employer will take to ensure laboratory employee protection: (i) [s]tandard operating procedures relevant to safety and health considerations to be followed when laboratory work involves the use of hazardous chemicals; (ii) [c]riteria that the employer will use to determine and implement control measures to reduce employee exposure to hazardous chemicals...[and] (viii) [p]rovisions for additional employee protection for work with particularly hazardous substances [which] include ‘select carcinogens,’ reproductive toxins and substances which have a high degree of acute toxicity.”

Section 1910.1450(e) also requires that “fume hoods and other protective equipment are functioning properly” and that specific measures “shall be taken to ensure proper and adequate performance of such equipment.”

NFPA 45, section 8.8.7 states that “[a] measuring device for hood airflow shall be provided on each chemical fume hood” and that the measuring device “shall be a permanently installed device and shall provide constant indication to the hood user of adequate or inadequate hood airflow.” Consistent with this standard, section 7.11, *Ventilation and Air Cleaning* (dated July 1, 2004), of the ANL ESH Manual requires the installation of airflow indicators on new laboratory chemical hoods.

Contrary to these requirements, UChicago Argonne failed to establish and implement proper hazard control and prevention measures to eliminate or abate the hazards associated with experimental procedures involving arsenic and CO. Specific examples are listed below:

- A. UChicago Argonne did not establish standard operating procedures for the use of select carcinogens, including arsenic. Section 4.5, *Chemical Carcinogens* (dated June 14, 2004), of the ANL ESH Manual requires the use of standard operating procedures for “all activities that involve the use of Class 1 or 2 carcinogens.” The MSD Chemical Hygiene Plan (CHP), dated January 17, 2008, does not provide specific operating procedures for the use of carcinogens or identify the use of any select carcinogens in MSD laboratories. The use of select carcinogens requires the establishment of a “designated area” and the use of containment devices such as fume hoods or glove boxes. These controls were not used or in place on the date of the incident.
- B. The muffle furnace used to heat the arsenic compound was not operated in a laboratory fume hood. The MSD CHP explicitly requires proper ventilation of ovens used for processing hazardous chemicals, and the MSD operating procedure for use of a muffle furnace (*Use of High Temperature Furnaces*, dated August 31, 1999) requires placement in a fume hood if an experiment may generate hazardous gases. When heated to decomposition, arsenic emits “highly toxic fumes” (ref. Science Lab.com material safety data sheet dated October 9, 2005). The MSD CHP also states that a chemical fume hood or approved containment will

be used for operations with chemicals that have an American Conference of Governmental Industrial Hygienists Threshold Limit Value (TLV) of 50 parts per million (ppm) or less. Arsenic has a TLV of 0.003 ppm.

- C. UChicago Argonne did not establish criteria to determine and implement control measures to reduce employee exposure to asphyxiants or flammable gases and did not establish standard operating procedures for the use of CO.
- D. UChicago Argonne did not verify that the laboratory fume hood used for the CO experiments would adequately capture the CO released from the glove bag during the conduct of the experiments. The laboratory fume hood used for the glove bag operations was not evaluated prior to the start of work to validate its capability to contain the release of CO under the expected conditions of the experiment. Subsequent tracer gas studies under simulated experimental conditions performed by UChicago Argonne demonstrated that the laboratory fume hood was not consistently effective in controlling worker exposure to CO in the breathing zone.
- E. The laboratory fume hood used for the CO experiments was not equipped with a flow monitor or low flow alarm to inform the user of proper operation of this engineering control.
- F. The CO monitors installed in the laboratory room where the CO work was performed were not appropriate for the application and were not procured in accordance with the requirements of section 4.3 of the ANL ESH Manual. The CO monitors were designed for residential use and did not have an alarm response time appropriate for an occupational environment. In addition, ANL industrial hygiene personnel failed to evaluate the adequacy of the monitors for usage consistent with the requirements of section 4.3 of the ANL ESH Manual.

Collectively, these deficiencies constitute a Severity Level I violation.
Proposed Civil Penalty - \$ 70,000

III. Training and Information

Title 10 C.F.R. § 851.25, *Training and information*, requires that “[t]he contractor must provide [t]raining and information for new workers, before or at the time of initial assignment to a job involving exposure to a hazard; [p]eriodic training as often as necessary to ensure that workers are adequately trained and informed; and [a]dditional training when safety and health information or a change in workplace conditions indicates that a new or increased hazard exists.” In addition, it requires contractors to “provide training and information to workers who have worker safety and health program responsibilities that is necessary for them to carry out those responsibilities.”

Title 29 C.F.R. § 1910.1450(b) defines the Chemical Hygiene Officer (CHO) as an employee “who is qualified by training or experience to provide technical guidance in the development and implementation of the provisions of the [CHP].”

Title 29 C.F.R. § 1910.1450(f) states that “[t]he employer shall provide employees with information and training to ensure that they are apprised of the hazards of chemicals present in their work area” and that such “information shall be provided at the time of an employee’s initial assignment to a work area where hazardous chemicals are present and prior to assignments involving new exposure situations.” This subsection further states that employee training shall include review of the “physical and health hazards of chemicals in the work area” and the “measures employees can take to protect themselves from these hazards...such as appropriate work practices, emergency procedures, and personal protective equipment to be used.”

Contrary to these requirements, UChicago Argonne failed to effectively train MSD employees on the provisions and requirements of the division’s CHP, including procedures associated with the use of a select carcinogen (arsenic) or procedures associated with the use of asphyxiants or flammable gases (e.g., CO). Specific examples are listed below:

- A. The Principal Investigator of the material synthesis experiment was not provided with training on carcinogen health hazards or control measures.
- B. The MSD employee performing the CO glove bag operation was not effectively trained on methods to ensure protection from the physical and health hazards present in the workplace, including specific procedures, work practices, and equipment necessary for proper instrument placement and glove bag deflation.
- C. The MSD ESH Coordinator was not adequately trained and qualified to manage the MSD laboratory safety program and carry out the responsibilities associated with the position. The MSD ESH Coordinator was not trained on the duties assigned to the position that are identified in the ANL ESH Manual and the responsibilities of the MSD CHO for providing technical guidance in the development and implementation of the provisions of the ANL and MSD CHPs.

Collectively, these deficiencies constitute a Severity Level I violation.
Proposed Civil Penalty - \$70,000

IV. General Requirements

Title 10 C.F.R. § 851.10, *General requirements*, states that “the contractor must: [e]nsure that work is performed in accordance with: (i) [a]ll applicable requirements of [Part 851]; and (ii) [w]ith the worker safety and health program for that workplace.”

Title 29 C.F.R. § 1910.1450(e)(4) requires the contractor to “review and evaluate the effectiveness of the [CHP] at least annually and update it as necessary.”

The *Argonne National Laboratory Worker Safety and Health Program/Integrated Safety Management System Description* (Rev. 1 – February 20, 2008) is UChicago Argonne’s approved worker safety and health program and establishes the framework for maintaining compliance with Part 851. The program incorporates the ANL ESH Manual, which assigns responsibilities

for management, supervisors, and employees in the conduct and oversight of experimental work and includes the following requirements:

- Chapter 1, *General Administration*, assigns to laboratory management the responsibilities for establishing and ensuring the implementation of methods for performing work in accordance with applicable requirements.
 - Section 1.1, *Argonne Environment, Safety and Health Program* (dated October 1, 2006), requires that the Director of Environment, Safety and Health/Quality Assurance Oversight (EQO) perform “oversight of [ESH] programmatic and support activities to evaluate effectiveness and compliance with federal, state, and local [ESH] laws and regulations and contractually imposed DOE directives” and verify “the effectiveness of division implementation of *ESH Manual*...requirements.”
 - Section 1.5, *Environment, Safety and Health Training* (dated August 28, 2007), requires that “a JHQ [Job Hazard Questionnaire] must be revised when requirements, job assignments, or job hazards change”
- Chapter 21, *Safety Analysis and Review*, section 21.2, *Experiment Safety Review*, requires each Division Director to “establish safety standards or criteria for conducting experiments, designing related experimental apparatus, and completing safety reviews prior to performing proposed experiments.”

Contrary to these requirements, UChicago Argonne failed to implement a worker safety and health program that ensured that experimental work activities were evaluated prior to the start of work and that validated the effectiveness of the experiment safety review process. Specific examples include the following:

- A. The MSD experiment safety review process did not incorporate the requirements of section 21.2 of the ANL ESH Manual for the preparation of standard operating procedures, use of management controls or periodic evaluations to ensure that changes in operating conditions are reflected in experiment safety reviews, and provisions for the design review of the experimental apparatus. The CO and arsenic events illustrated deficiencies in the MSD experiment safety review process for the performance of specified laboratory chemical hygiene functions by management, subject matter experts, and workers as follows:
 - The MSD ESH Coordinator did not perform an evaluation of MSD laboratory facilities for the new hazards associated with the introduction of arsenic and carbon monoxide.
 - The MSD CHO did not review and concur on procedures involving the use of highly toxic materials and “Class 1” carcinogens (arsenic).
 - Subject matter experts were not engaged in the development and evaluation of the experiment safety reviews for the arsenic and carbon monoxide experiments.

- MSD did not implement procedures to ensure that workers conducting the experiments were familiar with the hazards and controls associated with arsenic and carbon monoxide prior to the start of work.
- B. UChicago Argonne failed to verify that MSD incorporated the requirements of section 21.2 of the ANL ESH Manual in the development and implementation of the experiment safety review process.
- C. MSD failed to update the division CHP to reflect the introduction of carcinogens and asphyxiants into the laboratory and the evaluation of associated hazards and controls.
- D. UChicago Argonne's ESH oversight functions failed to identify that the MSD experiment safety review process did not meet ANL Worker Safety and Health Program, ANL ESH Manual, and Part 851 requirements. A May 18, 2007, UChicago Argonne Independent Assessment of the work planning and control program of select divisions (including MSD) indicated that the experiment safety review processes at ANL satisfied the requirements of chapter 21 of the ANL ESH Manual. The assessment erroneously concluded that line management oversight was sufficient to ensure that the work or activity proceeded as planned, and that changes in work scope were thoroughly reviewed, analyzed, documented and approved before implementation.
- E. MSD did not ensure that the Job Hazard Questionnaire (JHQ) maintained for the Principal Investigator conducting the material synthesis work was updated to reflect the use of carcinogens. The JHQ provides information for performing medical evaluations and surveillance, exposure monitoring, hazard assessment, training, and certifications.

Collectively, these deficiencies constitute a Severity Level I violation.
Proposed Civil Penalty - \$70,000

REPLY

Pursuant to the provisions of 10 C.F.R. § 851.42, UChicago Argonne is hereby obligated, within 30 calendar days of receipt of this Preliminary Notice of Violation (PNOV), to submit a written reply. Please send such reply by overnight carrier to the following address:

Director, Office of Enforcement
Attention: Office of the Docketing Clerk
U.S. Department of Energy
19901 Germantown Road
Germantown, MD 20874-1290

Copies should also be sent to the Under Secretary for Science, and the Manager of the Argonne Site Office. This reply should be clearly marked as a "Reply to the Preliminary Notice of Violation" and must include the following for each violation: (1) any facts, explanations and arguments that support a denial that the violation has occurred as alleged; (2) any extenuating circumstances or other reason why the proposed remedy should not be imposed or should be

mitigated; and (3) a discussion of the relevant authorities that support the position asserted, including rulings, regulations, interpretations, and previous decisions issued by DOE. Copies of all relevant documents shall be submitted with the reply. Corrective actions that have been or will be taken to avoid further violations should be delineated with target and completion dates in DOE's Noncompliance Tracking System.

Pursuant to 10 C.F.R. § 851.42(d), if UChicago Argonne does not submit a written reply within 30 calendar days of receipt of this PNOV, UChicago Argonne relinquishes any right to appeal any matter in this PNOV and this PNOV, including the proposed penalty, will constitute a final order. If UChicago Argonne agrees to comply with the proposed remedy and waives any right to contest the PNOV, the penalty of \$280,000 must be paid within 30 calendar days after receipt of this PNOV by check, draft, or money order payable to the Treasurer of the United States (Account 891099) and mailed to the Director, Office of Enforcement, Attention: Office of the Docketing Clerk, at the above address. In such cases, this PNOV will constitute a final order upon the filing of the reply. UChicago Argonne may be required to post a copy of this PNOV in accordance with 10 C.F.R. § 851.42(e).



John S. Boulden III
Acting Director
Office of Enforcement
Office of Health, Safety and Security

Washington, DC
this 30th day of April 2009

UChicago Argonne, LLC
Argonne National Laboratory Arsenic Ampoule Explosion and
Carbon Monoxide Overexposure

Enforcement Conference Summary

On January 9, 2009, the Department of Energy's (DOE) Office of Enforcement held an enforcement conference with senior managers from the University of Chicago (UC) and UChicago Argonne, LLC (UChicago Argonne) in Argonne, Illinois. The conference was held to discuss potential violations identified in an Office of Enforcement Investigation Report issued on November 25, 2008, involving the March 3, 2008, arsenic oxide explosion and the March 11, 2008, carbon monoxide overexposure that occurred at the Argonne National Laboratory (ANL).

Ms. Martha Thompson, Acting Director, Office of Enforcement, presided over the conference. Following introductions by DOE, University of Chicago, and ANL representatives in attendance, Ms. Thompson provided an overview of the conference's purpose and objectives.

Dr. Robert Zimmer, UC President, opened the discussion with an overview of the history of UC's stewardship of ANL and its current operating philosophy. Dr. Zimmer acknowledged the seriousness of the incidents and committed to improving UC's oversight role in establishing effective work planning and control at ANL.

Dr. Donald Levy, the UC Vice President for Research and National Laboratories, continued the discussion with a review of the fundamental deficiencies that led to the events, including the absence of complete and approved Experiment Safety Reviews for both research activities. Dr. Levy cited ANL's ineffective implementation of corrective actions for work planning and control as a contributing factor in these events as well as the misconception that rigorous safety processes are an impediment to scientific discovery. Dr. Levy committed UChicago Argonne to continuous improvement in worker safety and health performance through regular communications, recognition of safety performance, and active engagement of the UC Board of Governors.

Dr. Robert Rosner, ANL Director, reviewed the laboratory's responses and corrective actions since the March 2008 events. Immediate compensatory measures taken by senior management included a suspension of all experimental operations in the Materials Science Division (MSD), expanded training, and the establishment of work authorization requirements. Dr. Rosner also discussed the scope and effectiveness of the initial incident investigations and subsequent expanded investigations that the laboratory commissioned to identify the extent of the conditions that triggered these events. Dr. Rosner described the corrective actions associated with the development of a revised Experiment Safety Review process. Dr. Rosner offered the successful implementation of the activities associated with the reduction of the facility's nuclear footprint as evidence of the effectiveness of initial work planning and control process improvements.

Dr. Eric Isaacs, Deputy Laboratory Director for Programs, provided additional information on the corrective actions taken in response to these events, changes in MSD leadership, and efforts to delineate effective roles, responsibilities, authorities, and accountabilities across ANL.

Mr. Steve Richardson, Deputy Laboratory Director for Operations, reviewed the improvements in the ANL-wide work planning and control processes for experimental and non-experimental activities, with implementation planned for February 2009. Mr. Richardson concluded his discussion with UChicago Argonne's evidence supporting mitigation.

Dr. Zimmer concluded UChicago Argonne's presentation with a summary of ANL's commitment to improved worker safety and health program performance. A question and answer session followed ANL's presentation.

Ms. Kathy McCarty, Director, Office of Worker Safety and Health Enforcement, summarized the enforcement deliberation process. Ms. Thompson then adjourned the conference.

UChicago Argonne, LLC
Argonne National Laboratory Arsenic Ampoule Explosion and
Carbon Monoxide Overexposure

Enforcement Conference List of Attendees

January 9, 2009

DOE – Office of Enforcement

Martha Thompson, Acting Director
Kathy McCarty, Director, Office of Worker Safety and Health Enforcement
Kevin Dressman, Enforcement Officer
Robin Pickens, Enforcement Officer

DOE – Office of Science

Jay Larson, Acting Director, Environment, Safety and Health Division

DOE – Argonne Site Office

Ronald Lutha, Manager
Craig Schumann, Worker Safety and Health Enforcement Coordinator
John Houck, Environment, Safety and Health Division
Paul Neeson, Team Leader, Safety and Health
Eric Turnquest, Senior Facility Representative
Peter Washburn, Senior Facility Representative

DOE – Office of Science Integrated Support Center, Chicago Office

William Salsbury, PAAA Coordinator

University of Chicago

Robert Zimmer, President
Donald Levy, Vice President for Research and National Laboratories
Daryl Shapiro, Outside Counsel for University of Chicago and Argonne
Glenn McKeown, Associate General Counsel

Argonne National Laboratory

Robert Rosner, Director
Steve Richardson, Deputy Laboratory Director for Operations
Eric Isaacs, Deputy Laboratory Director for Programs
Al Sattelberger, Associate Laboratory Director for Energy Sciences and Engineering

Michael Pellin, Acting Director, Materials Science Division
Stuart Meredith, Director, Compliance, Oversight and Assessment Division
Jack Kester, Regulatory Compliance Manager
Danny Whitaker-Sheppard, Director, Environment, Safety, Health, and Quality Division
Nancy A. VanWermeskerken, Environment, Safety and Health/Quality Assurance
Representative for Energy Sciences and Engineering