



AMES
LABORATORY

ANNUAL SITE ENVIRONMENTAL REPORT CALENDAR YEAR 2018

Iowa State University
Ames, Iowa 50011-3400

Prepared for the
U.S. Department of Energy
Under Contract No. DE-AC02-07CH11358



Creating Materials & Energy Solutions
U.S. DEPARTMENT OF ENERGY

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1.0 EXECUTIVE SUMMARY

The primary purpose of this report is to summarize the performance of Ames Laboratory's environmental programs, present highlights of significant environmental activities, and confirm compliance with environmental regulations and requirements for calendar year 2018. This report is a working requirement of Department of Energy Order 231.1B, *Environment, Safety and Health Reporting*. It includes descriptions of the Laboratory's site, mission, the status of its compliance with applicable environmental regulations, its planning and activities to maintain compliance, and a comprehensive review of its environmental protection, surveillance and monitoring activities.

Ames Laboratory is located on the campus of Iowa State University (ISU) and occupies 13 buildings owned by the Department of Energy (DOE). See the Laboratory's [Web page](#) for location and Laboratory overview. The Laboratory also leases space in ISU owned buildings.

In 2018, the Laboratory accumulated and disposed of hazardous waste under an U.S. Environmental Protection Agency (EPA) issued generator number. All waste was handled according to applicable EPA, State, and local regulations and DOE Orders. The Laboratory operates as a Small Quantity Generator (SQG) of hazardous waste.

The Laboratory was in compliance with all applicable Federal, State, local, and DOE regulations and Orders in 2018.

There were no radiological air emissions or exposures to the general public due to Laboratory activities in 2018 (See U.S. Department of Energy Air Emissions Annual Report in Appendix A).

As indicated in prior Site Environmental Reports, formal pollution prevention awareness, waste minimization, and recycling programs have been in practice since 1990, with improvements implemented most recently in 2017 with Iowa State University's shift toward single-stream recycling. Included in recycling efforts are items such as batteries, cathode ray tube (CRT) monitors, corrugated cardboard, lamps, miscellaneous electronic office equipment, mixed paper, newsprint, food/beverage containers, and laboratory glassware. Ames Laboratory also recycles/reuses salvageable metal, used oil, and foamed polystyrene peanuts, and encourages chemical redistribution and sharing among research groups.

Ames Laboratory reported to DOE-Ames Site Office (AMSO), through the Laboratory's Performance Evaluation Measurement Plan (PEMP), and a performance level of "A-" was achieved in 2018 for Integrated Safety, Health, and Environmental Protection.

As reported in Site Environmental Reports for prior years, the Laboratory's Environmental Management System (EMS) has been integrated into the Laboratory's Integrated Safety Management System (ISMS) since 2005. The integration of EMS into Laboratory business practices allows the Laboratory to systematically review, address and respond to environmental impacts. In addition to DOE-identified objectives and targets, the EMS Steering Committee recommends annual environmental goals for the Laboratory. The Laboratory achieved a 2018 goal of hosting a seminar to recognize Earth Day by bringing in a representative from the city of Ames to raise awareness of local resources available for renewable energy and energy conservation best practices.

Beryllium was used routinely at Ames Laboratory in the 1940s and 1950s in processes developed for the production of highly pure uranium and thorium in support of the historic Manhattan Project. Laboratory metallurgists also worked on a process to produce pure beryllium metal from beryllium fluoride. In the early 1950s, beryllium oxide powder was used to produce

shaped beryllium articles and crucibles. As a result of that work, beryllium contamination now exists in many interstitial spaces (e.g., utility chases) and ventilation systems in Wilhelm Hall, Spedding Hall and Metals Development. Extensive characterization and remediation efforts occurred in 2009 and 2010 in order to better understand the extent of the contamination. Analysis of extensive sampling data suggests that a fairly wide dispersion of beryllium occurred (most likely in the 1950s and 60s) in Wilhelm Hall and in certain areas of Spedding Hall and Metals Development. Area air-sampling results and work-area surface characterizations indicate the exposure potential to current workers, building visitors and the public remains extremely low. This information is now used to guide cleaning efforts and to provide worker protection during remodeling and maintenance activities. Results were shared with the DOE's Former Worker Program to support former worker medical testing and compensation programs. A complete discussion of the Laboratory's beryllium characterization and remediation efforts can be found on the Ames Laboratory [Beryllium Information webpage](#).

2018 Ames Laboratory Site Environmental Report Feedback Form

This feedback form is provided to solicit public input on the development and improvement of future Site Environmental Reports. Public input is encouraged and appreciated. Remove and copy as needed. Attach additional pages as needed or send comments to sarahmb@ameslab.gov.

Return to: Ames Laboratory
Environment, Safety, & Health
2408 Pammel Drive, Iowa State University
Ames, IA 50011-3400
ATTN: Sarah Morris-Benavides

1. What prompted your interest in environmental activities at Ames Laboratory?
2. In what ways can this report document and/or format be improved?
3. Do you have any questions on specific items or issues in this report?
4. Do you have any other comments?

2.0 INTRODUCTION

2.1 Site Location

Ames Laboratory is a U.S. DOE facility located on the campus of Iowa State University (ISU) in Ames, Iowa. See the Laboratory's [Web page](#) for locations and Laboratory overview. Ames is a government-owned, contractor-operated (GOCO) facility. ISU is the Laboratory's contractor. The Technical and Administrative Services Facility (TASF) houses most of the Laboratory's management offices. The buildings owned by the DOE are listed below.

<u>Building</u>	<u>Gross Square Feet</u>
Spedding Hall	107,630
Metals Development Building	69,663
Wilhelm Hall	56,541
TASF	46,991
Campus Warehouse Building	16,506
Sensitive Instrument Facility (SIF)	13,304
Mechanical Maintenance Building	8,540
Paint and Air Conditioning Shops	4,998
Construction Storage Shed	4,440
Maintenance Shop Bldg	7,503
Records Storage	1,689
Storage Shed 1	1,461
Storage Shed 2	1,702
<hr/>	<hr/>
Total DOE Owned	340,968

In addition to the buildings owned by the DOE, Ames Laboratory also leased space from ISU in 2018.

The City of Ames, Iowa surrounds the ISU main campus. In 2018 the population of Ames was approximately 67,154, which includes the ISU student population of approximately 34,992. Ames is located in Story County, which has a population of approximately 98,105.

2.2 General Environmental Setting

The climate is temperate continental, and is subject to wide temperature and precipitation ranges throughout the year. Mean monthly temperature varies from an average low of minus - 11.3 degrees Celsius (12°F) in January to an average high of 29.1 degrees Celsius (84°F) in July. Average rainfall equivalent precipitation varies from 1.8 centimeters (0.7 inches) in January to 12.6 centimeters (4.96 inches) in June.

The region's topography is gently rolling with a slight overall negative gradient to the southeast. Under the shallow topsoil, the soils are glacial till with a depth of approximately 19.8 meters (65 feet). This material is underlain by predominantly limestone bedrock. In the central campus area, the depth to first groundwater is approximately 3.0 meters (10 feet). Surface run-off flows into Squaw Creek, a tributary of the South Skunk River. The streams have a combined average daily flow of approximately 644 million liters (170 million gallons).

2.3 Site Mission

The Laboratory's mission is to create materials, inspire minds to solve problems, and address global challenges. The Laboratory conducts fundamental research in the physical, chemical, materials, and mathematical sciences and physics, which underlie energy generating, conversion, transmission and storage technologies, environmental improvement, and other technical areas essential to national needs. These efforts are maintained to contribute to the achievement of the DOE's missions and goals; more specifically, to increase the general level of scientific knowledge and capability, to prepare engineering and physical sciences students for future scientific endeavors, and to initiate nascent technologies and practical applications arising from the Laboratory's scientific programs.

The Laboratory approaches its operations with the safety and health of workers as a constant objective and with genuine concern for the environment and the public. Ames Laboratory does not conduct classified research.

2.4 Primary Operations and Activities

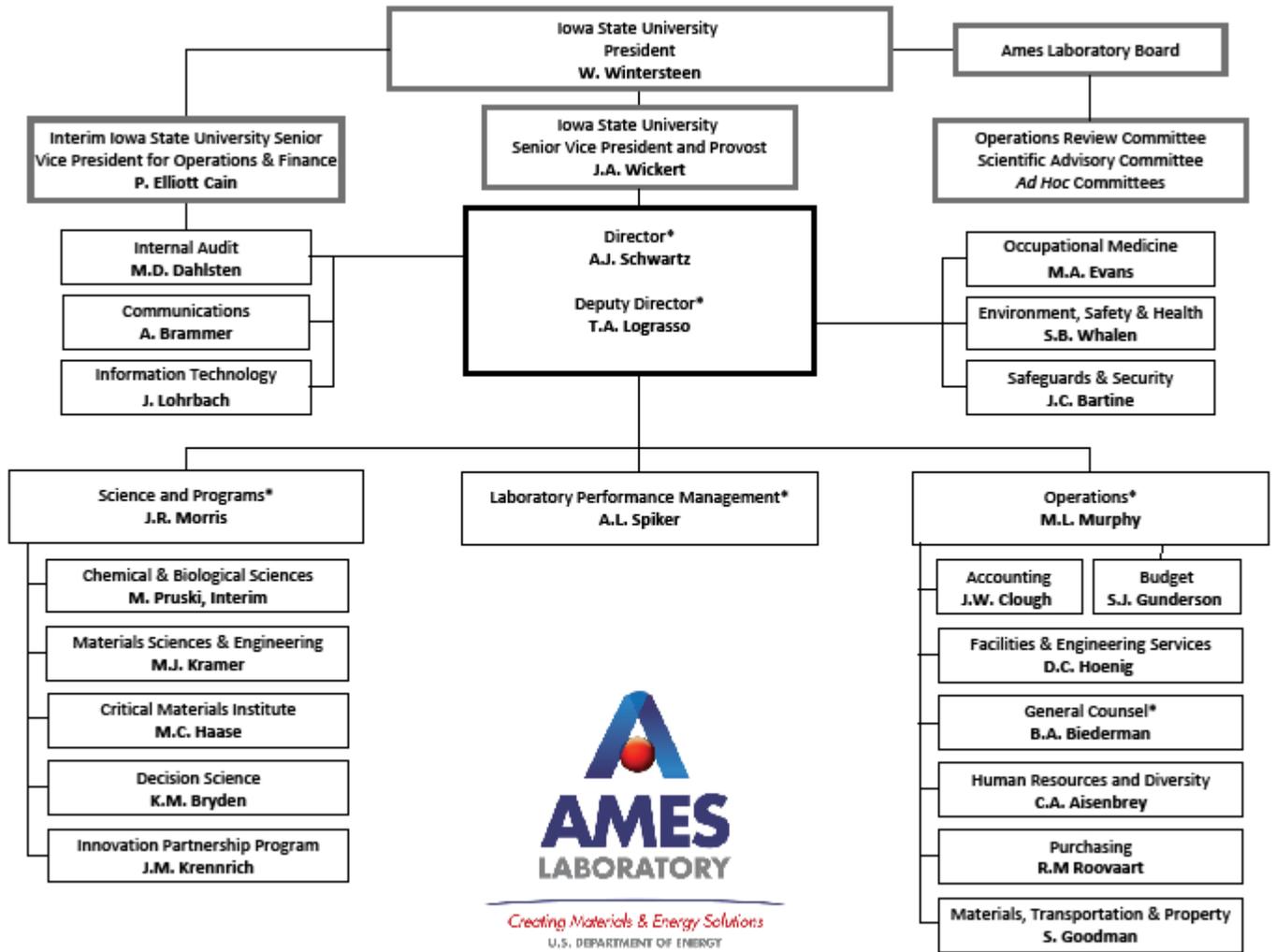
Ames Laboratory is recognized the world over for its leading collaborative research in the theory, design, synthesis, processing, and characterization of innovative, energy-relevant materials. The Laboratory has established exceptional strengths and made major contributions in the synthesis and science of magnetic, electronic, quantum, catalytic, functional and critical materials, using core strengths in rare-earths but also the full palette of elements provided by the periodic table. These strengths are a cornerstone of the Laboratory's rich and world-leading materials research portfolio, which lies at the frontier of some of the most challenging problems in matter and energy.

Ames Laboratory is internationally recognized for its ability to synthesize high-quality samples of unusual materials. The Ames Laboratory's Materials Preparation Center prepares, purifies, fabricates and characterizes materials in support of R&D programs throughout the world.

Ames scientists and engineers have repeatedly developed unique instrumentation to answer compelling scientific questions, contributing pioneering roles in the creation of inductively-coupled mass spectrometry and multiplexed capillary electrophoresis. The Laboratory has built on these breakthroughs by advancing solid-state nuclear magnetic resonance, laser angle resolved photoelectron emission spectroscopy, terahertz spectroscopy, and establishing the Sensitive Instrument Facility to provide a platform for future science-driven instrumentation development. Ames continues its remarkable record of transitioning basic science to applied science to technology commercialization through its leadership addressing national challenges through its Critical Materials Institute, advanced powder synthesis, and the caloric materials consortium, CaloriCool®.

2.5 Organization and Administration

ISU operates Ames Laboratory for the United States Government under Contract Number DE-AC02-07CH11358 with the U.S. DOE. The DOE Office of Science, through the AMSO, administers the contract. In 2018, approximately 620 people are involved with the Laboratory either as full- or part-time employees or as Laboratory associates. Approximately 466 full and part time employees and 154 associate (non-payroll) employees. See Organizational Chart, Figure 2.5-1.



06-17-19

*Member of Executive Council

Figure 2.5-1 Organizational Chart

3.0 COMPLIANCE STATUS

The Laboratory was in compliance with all applicable Federal, State, local, and DOE Orders in 2018.

3.1 Environmental Restoration and Waste Management

3.1.1 *Comprehensive Environmental Response, Compensation and Liability Act (CERCLA)*

There were no sites regulated under CERCLA. Proper public comment periods have been observed for former site restoration activities. The Community Advisory Group (CAG), formed in May 1994, was and is the primary vehicle for public input to these activities. The CAG has been inactive over the past several years. The most recent interaction with CAG members includes a letter regarding the Energy Employees Occupational Illness Compensation Program Act (EEOICPA) and a letter regarding the Laboratory's support of the Special Exposure Cohort Petition for employees who worked at the Laboratory from 1942 to the present. EEOICPA's mission is to deliver benefits to eligible employees and former employees of the DOE, its contractors and subcontractors or to certain survivors of such individuals, as provided in the EEOICPA.

3.1.2 *Resource Conservation and Recovery Act (RCRA)*

All waste generated by Ames Laboratory under the contract with DOE is DOE waste. In 2018, the Laboratory had one active RCRA generator identification number and two inactive generator identification numbers (see the summary table 4.4-1). Activities associated with the main campus EPA ID number were those of a small quantity generator (SQG). A SQG is defined as generating 100 to 1000 kg/month of non-acutely hazardous waste and/or ≤ 1.0 kg/month of acutely hazardous waste. The SIF, due to its location and generation rate, is categorized as a Very Small Quantity Generator (VSQG). VSQGs are defined as generating less than 100kg/month of non-acutely hazardous waste and less than 1kg/month of acutely hazardous waste.

In calendar year 2018, 950 kg of hazardous waste was properly disposed of through a contracted vendor from the main campus EPA ID and the VSQG. Figure 3.1.2-1 shows the RCRA hazardous waste generation over the past several years.

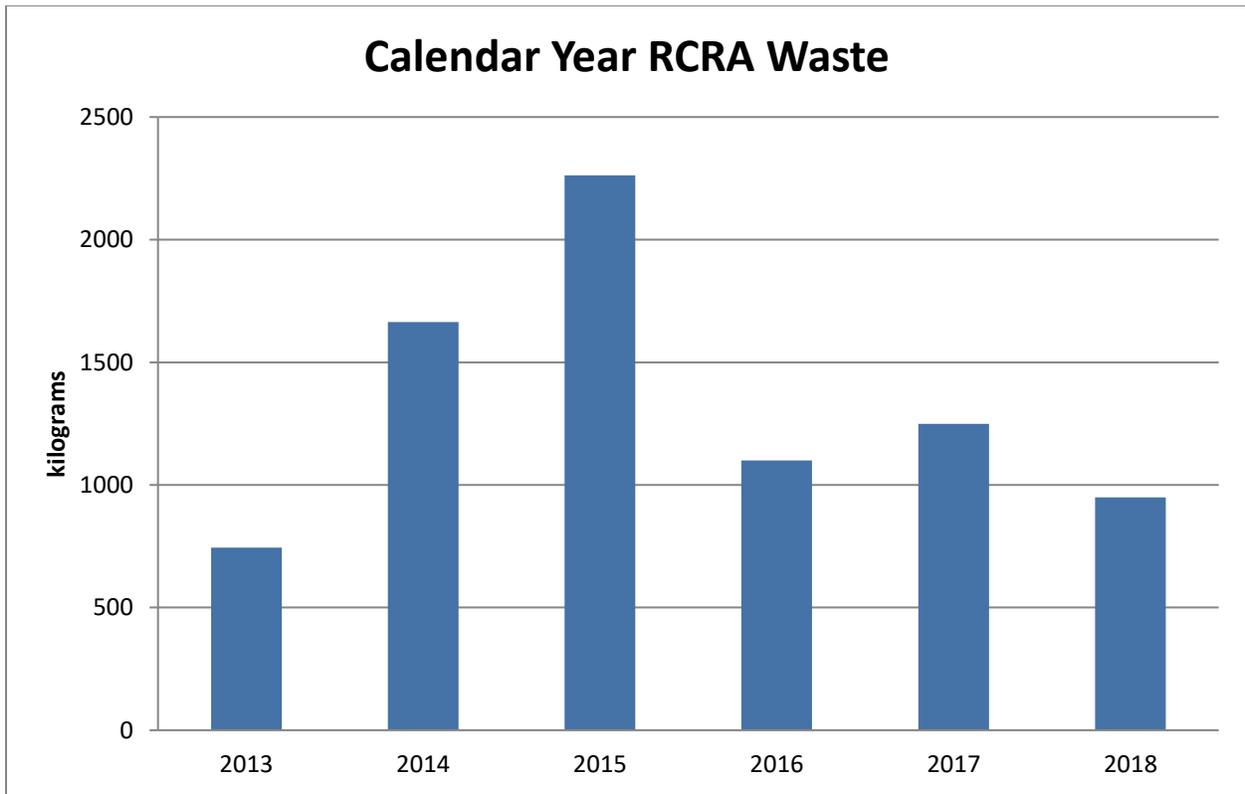


Figure 3.1.2-1 RCRA Waste Generation

The RCRA generator identification numbers associated with the former Waste Handling Facility (WHF) and the former Chemical Disposal Site (CDS) have been designated by EPA as “non-generator” sites because waste is no longer generated at these sites.

Ames Laboratory is registered with the EPA as a Small Quantity Generator (SQG) of Hazardous Waste. Prior to 2006, the Laboratory was a Large Quantity Generator and was required to submit a biennial report (aka: *Hazardous Waste Report*) of RCRA waste removed from the facility. The report was last completed and submitted to the EPA, in January 2006 for the 2005 calendar year.

The Laboratory generates small amounts of radioactive low-level waste (LLW) from legacy contaminated buildings during renovation activities. Approximately 2-3 cubic meters of LLW are generated each year. There were no LLW shipments in 2018. LLW is shipped offsite for disposal every 6-8 years. The last shipment occurred in July 2012.

The Laboratory disposed of RCRA waste at an out-of-state EPA permitted facility through a contracted vendor. There were two shipments of RCRA hazardous waste in 2018 from both the main campus SQG and VSQG.

Sanitary waste is disposed of through the University’s sanitary sewer system which is treated at the City of Ames’ wastewater treatment plant. Solid waste is sent to the City of Ames Resource Recovery Plant for processing and energy recovery.

The Laboratory had no underground storage tanks (USTs) in 2018. One aboveground, double walled diesel tank with interstitial leak detection is in place for two backup generators. Additionally, the backup generator that serves the SIF has a double walled diesel tank. There were no leaks or container integrity problems noted in the tanks’ monthly inspections in 2018.

3.1.3 *Federal Facilities Compliance Act (FFCA)*

The FFCA is part of 42 USC 6901 and amends a part of RCRA. FFCA requires the preparation of site treatment plans for the handling of mixed wastes. EPA approved the Ames Laboratory Site Treatment Plan (STP) in January 1996.

Any newly generated mixed waste is handled and disposed of according to EPA, State, and local regulations and DOE Orders.

3.1.4 *National Environmental Policy Act (NEPA)*

All research activities in 2018 were covered under the Laboratory's site-wide Categorical Exclusion (CX) for "Indoor Bench-Scale Research Projects and Conventional Laboratory Operations". Routine facility upgrades and renovations are covered under the Laboratory's site-wide CX; "Renovations and maintenance activities for buildings, structures, infrastructures and equipment". Both exclusions were submitted to DOE-AMSO for approval and are valid through July 25, 2023. These "site-wide" CXs eliminate unnecessary documentation but still uphold the integrity of NEPA. Categorical exclusions are classes of actions that DOE (10 CFR 1021 Subpart D, App. B) has determined do not individually or cumulatively have a significant effect on the environment and do not require the preparation of either an environmental assessment or an environmental impact statement. The newly completed Sensitive Instrument Facility (SIF) underwent a NEPA review and was determined to be excluded from further NEPA review as it meets the requirements for Categorical Exclusion B3.6 of 10 CFR part 1021. An archaeological consulting firm was hired to conduct an archaeological survey of the land where the proposed SIF was constructed. The survey was required to fulfill the requirements of section 106 of the National Historic Preservation Act. The survey found no archaeological sites in the project (SIF) area. The survey report was sent to the State Historical Preservation Officer (SHPO) as required by section 106 of the National Historic Preservation Act. No further action was required by the SHPO.

3.1.5 *Toxic Substances Control Act (TSCA)*

The Laboratory complies with the State of Iowa Solid Waste Disposal Rule #102.14 and 40 CFR 61, Subpart M (asbestos NESHAP) when disposing of ACM. ACM quantities are dependent upon the amount of renovation activities involving removal of floor tile, fume hoods, and pipe insulation. Several fume hoods were disposed of during CY2018 as is reflected in Figure 3.1.5-1, which shows ACM quantities shipped for disposal over the past six years.

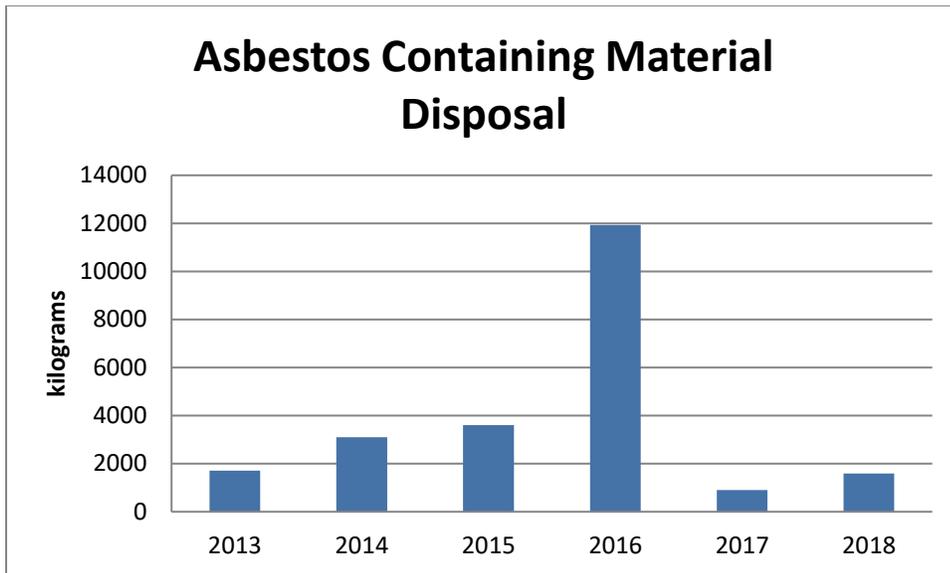


Figure 3.1.5-1 Asbestos Containing Material Disposal

The Laboratory disposed of one oil filled transformer during 2016 as shown in the spike for polychlorinated biphenyl (PCB) waste in the Figure 3.1.5-2. The fluid contained was sampled in December of 2015 and determined to contain 86.6 ppm making it a PCB contaminated transformer for a total disposal weight of 1,938kg. Figure 3.1.5-2 shows amounts of PCB waste over the past six years.

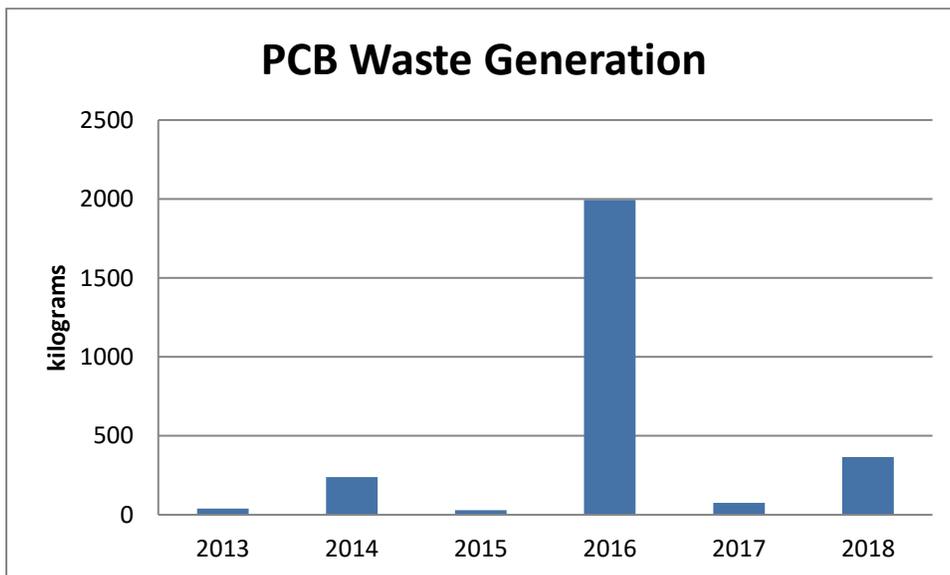


Figure 3.1.5-2 PCB Waste Generation

3.1.6 Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA)

Ames Laboratory does not purchase or use pesticides regulated by FIFRA. Pesticide spraying is done in portions of buildings by a licensed applicator using approved chemicals.

3.2 Radiation Protection

3.2.1 DOE Order 458.1

Ames Laboratory has prepared the Environmental Radiation Protection Plan (Plan 10200.041) according to the requirements of DOE O 458.1. The plan demonstrates that the Laboratory has plans, policies and procedures in place to protect the public and the environment against undue risk from radiation associated with DOE radiological activities. There were no detectable or reportable radiological releases to the public or the environment in 2018 (See U.S. Department of Energy Air Emissions Annual Report, Calendar Year 2018 in Appendix A).

3.2.2 *DOE Order 435.1*

The majority of the Laboratory's radioactive waste is generated through renovation activities that occur in DOE buildings. These buildings were contaminated by past activities. All waste generated is low-level waste. The Laboratory has written procedures to manage these radioactive materials.

3.3 Air Quality and Protection

3.3.1 *Clean Air Act (CAA)*

U.S. EPA Region VII has delegated CAA authority to the State of Iowa Department of Natural Resources (IDNR). The IDNR issued an official ruling for Ames Laboratory on July 18, 1994, stating that no permitting and no monitoring is required for the Laboratory's fume hoods.

The Laboratory maintains two construction air permits which were issued by the IDNR in December 1996. These are for the paint booth and sand blaster. The Laboratory also has ten exempt air emission sources (See Section 3.17 for a summary of permits).

3.3.2 *National Emission Standards for Hazardous Air Pollutants (NESHAPS)*

Asbestos containing materials (ACM) are removed and handled according to applicable asbestos NESHAP regulations (40 CFR 61 subpart M). Annually, notifications are sent to the IDNR for estimated small abatement and demolition projects in association with routine maintenance and revisions are submitted when necessary.

The Laboratory was in compliance with all CAA requirements, including the NESHAP regulations for radionuclide emissions from DOE facilities. The Laboratory used small quantities of chemicals and radioactive materials for laboratory bench-top research and development activities in 2018. The Laboratory did not have any air emissions in 2018 that could have exposed the public to radioactivity (See correspondences in Appendix A).

3.4 Water Quality and Protection

3.4.1 *Clean Water Act (CWA)*

Ames Laboratory does not have any point sources of effluents requiring National Pollutant Discharge Elimination System (NPDES) permits. The Laboratory discharges wastewater to the ISU sanitary sewer system, which discharges into the City of Ames sanitary sewer system. The City of Ames has an NPDES permit. The City of Ames has an agreement for wastewater pre-treatment with ISU, which includes Ames Laboratory's wastewater. Both the City of Ames and ISU sampled the University's wastewater effluent using EPA protocols and methods in 2018 as part of this agreement. The Laboratory discharged approximately 2,688,900 gallons of wastewater to ISU's sanitary sewer system in 2018. Wastewater trends are summarized in Figure 3.4.1-1.

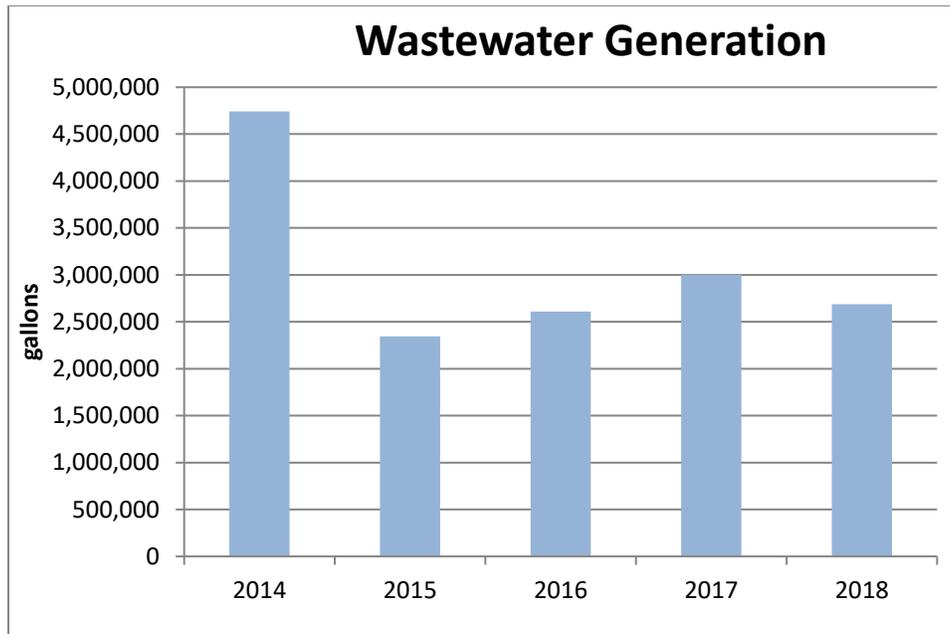


Figure 3.4.1-1, Wastewater Generation

Under 40 CFR Part 112, the Laboratory is required to have a Spill Prevention, Control and Countermeasure (SPCC) Plan as the Laboratory’s storage (2,864 gallons) exceeds the 1,320 gallon storage capacity threshold for oil storage. The Laboratory’s Plan is part of Iowa State University’s overall Plan. The SPCC Plan documents how the Laboratory prevents potential oil spills/releases from entering navigable waters and the environment. Preventions include, but are not limited to, monthly inspections of qualified oil filled equipment and training to applicable employees.

3.4.2 Stormwater Management

DOE buildings are on land leased from ISU, the ISU storm-water permit (MS4s) covers Ames Laboratory activities.

3.4.3 Safe Drinking Water Act (SDWA)

Drinking water for the Laboratory is supplied by the City of Ames public water system through the University’s water mains. The Ames public water system is tested by the city to verify SDWA standards are being met. The Laboratory used 2,688,900 gallons of potable water in 2018.

Ames Laboratory drinking fountains are sampled for lead by Ames Laboratory Facilities and Engineering Services. Fountains were sampled for lead in 2017. Historical data shows no evidence of lead in drinking water. Drinking water is sampled every three years. Results are summarized in Table 3.4.3-1.

Table 3.4.3-1, Drinking Fountain Analysis for Lead

Building Location	2003 (mg/L)	2005 (mg/L)	2008 (mg/L)	2011 (mg/L)	2014 (mg/L)	2017 (mg/L)
Spedding Hall, ground floor east hallway	<0.005	<0.005		<0.0005		
Spedding Hall, ground floor west hallway			<0.001		<0.0005	<0.0025
Wilhelm Hall, 3rd floor east hallway	<0.005	<0.005	<0.001	<0.002	<0.001	<0.0025
Metals Development, room 158	<0.005	<0.005	<0.001	<0.0005	<0.0005	<0.0025

* The regulatory limit for lead is 0.015 mg/L.

3.5 Other Environmental Statutes

3.5.1 *Endangered Species Act (ESA)*

The Indiana Bat, is a state and federally listed endangered species found throughout Story county, including on or near Ames controlled areas; however this is not a critical habitat.

3.5.2 *Invasive Species*

Several invasive species can be found in Iowa. The Laboratory leases the land on which DOE buildings are located from ISU, so there is not habitat within Ames' purview for invasive species to be present.

3.5.3 *National Historic Preservation Act (NHPA)*

There are nine structures on ISU's campus that are on the state historic register. None of them are associated with Ames Laboratory activities.

DOE-owned buildings at the Ames Laboratory are on land leased to DOE by Iowa State University. A detailed building survey ([Historical & Architectural Survey & Evaluation](#)) was conducted in June 2009 as required by the National Historic Preservation Act, Section 110. The building survey was conducted by a contracted architectural historian. The *Historical & Architectural Survey & Evaluation* report indicates that three Ames Laboratory buildings could be nominated to the National Historic Registry. DOE, in consultation with the State Historical Preservation Officer (SHPO), determines eligibility for listing on the National Register for Historical Places. At this time the DOE is not pursuing nomination of these three buildings (Spedding Hall, Wilhelm Hall and Metals Development). However, any adverse impact to an eligible building would be mitigated in consultation with the SHPO.

The Ames Laboratory procedure for identifying hazards prior to disposition of excess materials requires that excess items be evaluated for historical significance.

3.5.3 *Migratory Bird Treaty Act (MBTA)*

There are over 200 bird species that may migrate through Ames, IA. However, there are no activities at Ames Laboratory that impact migratory birds.

3.6 Sustainability

Ames Laboratory's commitment to meet the DOE sustainability goals through projects, tasks, and activities begins with the integration of the Environmental Management System (EMS) into the Integrated Safety Management System (ISMS) to ensure the implementation of safety and environmental management in all aspects of Laboratory work, from planning to completion.

Ames Laboratory uses its Environmental Management System (EMS) and the associated Steering Committee (EMSSC) as a vehicle to provide awareness of the objectives and targets reported in our Site Sustainability Plan. The EMSSC has adopted these objectives and targets and proposes initiatives to assist in the achievement of these goals.

The age of the facilities makes it challenging to achieve energy efficiency and sustainability in the existing facilities. However, Ames' success in purchasing renewable energy in the form of wind power has been noted by the Sustainability Performance Office (SPO): "Ames has made

impressive strides in this goal area, and the SPO would like to share these successes.” In FY2016, NREL screened Ames Laboratory for cost-effective renewable energy opportunities that would lower the site’s 25-year lifecycle cost of energy. This screening found that while there is an incentive for Photovoltaic (PV) use, “the current low cost of utility electricity and average solar resource makes it difficult for PV to be cost-competitive”.

Ames Laboratory has met the Fleet Reduction Goal of 35% and 75% of the remaining fleet vehicles, are Alternative Fuel Vehicles (AFV). Additionally, Ames Laboratory has increased its usage of AF by 1,488% from FY 2005 to FY 2017 and has met the overall goal of 10% annual increase between 2005 and 2015.

Ames Laboratory completed installation of required advanced electric meters in FY 2010 and is in the process of identifying and prioritizing sub-metering to identify areas for improvement.

Cool roof area is up from 13% to 30.6% due to TASF roof replacement in FY16 and cool roof installation on the SIF in FY15.

Ames Laboratory had achieved compliance with the High Performance and Sustainable Buildings (HPSB) guiding principles at 15% of the existing buildings at the site. With the addition of a new building the compliance has fallen to 12.5% which is short of the goal. Ames continues to implement the guiding principles in all of the major buildings where it is economically justified. The SIF building, which the Laboratory took possession of in FY 2016, meets requirements for LEED Certification and is being evaluated for compliance with the Revised HPSB Guiding Principles.

During 2018, Spedding Hall had a total of 144 metal frame, single pane, and fixed type windows replaced with new double pane “low emissivity” windows. The new windows have almost double the thermal resistance and shading performance. They are also expected to greatly reduced air infiltration rate around the frame. The new windows will save energy and money expended to heat and to cool the building.

3.7 Emergency Planning and Community Right-to-Know Act and Superfund Amendments and Reauthorization Act (SARA) Title III

3.7.1 Status of Reporting

SARA Title III created the Emergency Planning & Community Right to Know Act (EPCRA), a statute designed to improve community access to information about community hazards and to facilitate the development of chemical emergency response plans by state/tribe and local governments. The Laboratory was required to report sulfuric acid from lead acid batteries used in fork trucks and uninterruptible power supplies (UPS) due to quantities exceeding the 500 pound threshold reporting limit, under EPCRA Section 12 laboratory research chemicals are exempt from EPCRA Sections 302-303, 311-312 and 313. The Laboratory did not store any research-related chemicals in excess or near EPCRA threshold limits in 2018. The Laboratory maintains memoranda of understanding (MOUs) with the Iowa State University Department of Public Safety and the City of Ames Fire Department for emergency and hazardous material situations. Copies of MOUs are located in the Ames Laboratory Emergency Plan (Plan 46300.001). The Laboratory was not required to report under EPCRA Section 304 as there were no reportable releases in 2018.

Releases to the environment are reported to the Iowa Department of Natural Resources (IDNR) in accordance with the IAC, Rule 567, Chapter 131. Spills/releases are cleaned up in accordance with the IAC, Rule 567, Chapter 133. There is no minimum reportable quantity under Chapter 131. There were no reportable spills or releases in 2018. Reportable spills,

releases and occurrences are entered in DOE’s Occurrence Reporting and Processing System (ORPS) as prescribed in DOE Manual 231.1-2. The Laboratory also reports any “reportable” spills/releases to DOE-AMSO.

Table 3.7-1, Status of EPCRA Reporting

<i>EPCRA Section</i>	<i>Description of Reporting</i>	<i>Status</i>
EPCRA Sec. 302-303	Planning Notification	Not Required
EPCRA Sec. 304	EHS Release Notification	Not Required
EPCRA Sec. 311-312	MSDS/Chemical Inventory	Required for sulfuric acid in batteries/ Voluntarily reporting for research chemicals
EPCRA Sec. 313	TRI Reporting	Not Required

3.7.2 E.O. 11988, Floodplain Management

All Laboratory facilities are well outside the 100-year flood line as mapped by the U.S. Geological Survey (USGS) and the Iowa Geological Survey Bureau (GSB). The Laboratory is in full compliance with 10 CFR 1022.

3.7.3 E.O. 11990, Protection of Wetlands

No wetlands are impacted by Ames Laboratory activities. The Laboratory is in full compliance with 10 CFR 1022.

4.0 OTHER ENVIRONMENTAL ISSUES AND ACCOMPLISHMENTS

4.1 Assessments

In April of 2018, a joint Ames and DOE program-specific assessment was conducted to gauge Ames’ conformance to the ISO14001:2015, Environmental Management Systems.

The assessment resulted in one level 2 finding, three opportunities for improvement, and three strengths. All findings and opportunities for improvement were categorized through our local operating experience program, addressed through a corrective action plan and reported to the AMSO through a closure report. Summarized below are the findings from this assessment.

- Objective evidence was not observed that satisfied the requirements of ISO14001:2015 Clause 9.3, Management review
- Opportunity to improve the EMS Description and supporting documents and training by aligning them to ISO14001:2015 standard.
- Opportunity to improve planning for external communication to environmental issues.
- Opportunity to improve the EMS Aspect Procedure by reflecting life-cycle perspective for aspects and associated impacts.

A self-assessment of Waste Minimization/Pollution Prevention was conducted from January to May 2018. This assessment focused on evaluating the Laboratory’s Waste Minimization/Pollution Prevention Plan and Waste Management Program Manual for

compliance with governing regulations. Four opportunities for improvement were identified along with one strength and one noteworthy practice.

Green and Sustainable Remediation (GSR)

Ames does not currently manage any RCRA or CERCLA remediation sites.

Site Resilience

Ames' strategy to enhance resilience is outlined in policies, plans, and procedures, and is evaluated in accordance with potential risks during document review cycles, strategic planning efforts, and as a part of annual contract deliverable submissions. These documents address impacts to the Laboratory from any number of potential natural or man-made events or incidents. A brief summary of the documents related to organizational resilience is included below.

- All Hazard Survey (AHS): This document fulfills the requirement of DOE O 151.1D, Comprehensive Emergency Management System, to identify conditions to be addressed by a comprehensive emergency management program. The AHS must identify all hazards that are applicable to, or may impact, facility operations and at Ames, this covers the area and buildings, describes potential health, safety and environmental impacts, and clarifies that Ames Laboratory is a Core Program. The AHS addresses the following: natural hazards, technological hazards, human-caused incidents, Threat/Hazard Identification and Risk Assessment (THIRA), and a hazardous materials screening process.
- Ames Common Controls – Cyber Security Program Plan: This plan documents the administrative, technical, and operational protection measures and procedures of unclassified cyber security controls and serves as the single resource document defining Ames' information and information systems and their related security.
- Ames Laboratory Strategic Plan 2017: This plan lays the foundation for sustainable future pursuits of excellence in science by developing the tools and knowledge base to design, create and use new energy-relevant materials to address national and global challenges.
 - Areas within the plan that will directly enhance organizational resilience are interconnected within Goal 2: Mission-enabling Infrastructure and Facilities, Goal 3: Safety and Security Excellence, and Goal 4: Business and Operational Excellence.
- Business Impacts Assessments (BIA): The following departments complete a BIA: Accounting, Budget, Enterprise Information Services, Environment, Safety and Health, Facilities and Engineering Services, Human Resources and Performance Management. The BIA requires each department to define their key functions and a the following:
 - Key staff: What staff do you require to carry out your key functions
 - Skills/Expertise/ Training: What skills/level of expertise is required to undertake key functions?
 - Minimum Staffing Levels: What is the minimum staffing level with which you could provide some sort of service?
 - Buildings/Facilities: What locations/facilities are essential to carry out your key functions?
 - Equipment and resources: What equipment/resources are required to carry out your key functions?

- IT: What IT is essential to carry out your key functions?
- Documentation: What documentation/records are essential to carry out your key functions, and how are they stored?
- Systems & Communications: What systems and means of communication are required to carry out your key functions?
- Reciprocal Arrangements: Do you have any reciprocal agreements with other organizations?
- Contractors/External Providers: Do you tender key services out to another organization? If so – to whom and for what?
- Suppliers: Who are your priority suppliers and whom do you depend on to undertake key functions?
- Reputation: Who are your key stakeholders?
- Legal Considerations: What are your legal, statutory and regulatory requirements?
- Vulnerable groups: Which vulnerable groups might be effected if your organization fails to carry out key functions?
- Contingency Procedure for Business and Network Infrastructure/Services: This procedure enables the Laboratory to recover as quickly and effectively as possible from an unforeseen disaster or emergency that interrupts normal business operations.
- Continuity of Operations Plan: This plan provides an overview of Ames Laboratory's program to address continuity events described as "an emergency caused by a natural disaster, accident, military or terrorist attack, technological emergency, or infectious disease/pandemic influenza threat which impacts or has the potential to impact the performance of essential functions.
- Emergency Plan: This plan establishes and maintains a documented emergency management program that implements the requirements of Federal, State, and local laws, regulations and ordinances for fundamental worker safety. This plan is supported by the Ames Laboratory Emergency Plan Implementation Procedure, Communications Emergency Procedure, Waste Management Contingency Plan and Procedure, and Fire Safety Baseline Needs Assessment.
- Mission Readiness System Description: The mission readiness process is made up of the following summarized elements:
 - Condition Assessment Survey: A periodic inspection of the facilities and infrastructure
 - Safety Walk-through Programs: All Ames space is inspected throughout the year
 - Assessments and Reviews: Internal and external assessments are performed in a variety of topical areas each year
 - Maintenance Program: Provides the planning and performance of cost effective maintenance, upkeep, and repair of DOE property
 - Annual Mission Readiness Interviews: Key personnel are interviewed to identify gaps in facility capability
 - Preparation of the Annual Lab Plan: Identify gaps between facility capability and mission requirements, develop and prioritize projects or strategies to address the gaps

- Field Budget Process: Prioritized projects are incorporated into the Field Budget Submission
- Maintenance and General Services Budget Process: Addresses core and recurring activities, such as corrective and preventative maintenance, as well as individual expensed projects
- Plan Execution: When GPP funding is obtained and overhead budgets are approved project plans are executed.
- Self-Assessment and Reporting: Mission Readiness team meets annually to assess for improvements and reporting is annual through the Performance Evaluation and Measurement Plan
- Site Security Plan: The Site Security Plan describes the practices and resources utilized to protect government owned facilities, equipment, and other interests at Ames Laboratory from loss or damage due to intrusion, theft, disruption, unauthorized access to intellectual and proprietary information and other threats.

In summary, each of these documents serves to enhance the Laboratory's ability to react and respond to any number of potential incidents from a variety of threats. The threats, risks and vulnerabilities are identified in each specific plan along with the mitigation and response strategies to include continuity operations, identified alternate capabilities through internal or external resources, planning, preparedness, and response.

4.2 Continuous Release Reporting

Ames Laboratory did not engage in continuous release activities in 2018.

4.3 Unplanned Releases

There were no planned, unplanned or accidental releases from Ames Laboratory in 2018.

4.4 Summary of Permits

DOE held three waste generator identification numbers for Ames Laboratory in 2018 (see table 4.4-1 below), although two of the sites were inactive. In 2006, the Laboratory was reclassified from Large Quantity Generator (LQG) RCRA status to Small Quantity Generator (SQG) status.

In 2018, Ames Laboratory had two air emission source construction permits and ten exempt sources (see table 4.4-2 below). Ames had no environmental discharge, operational, storage, treatment or disposal permits for gaseous, liquid or solid effluents.

Table 4.4-1, DOE RCRA Generator Identification Numbers

RCRA Generator ID #	Type	Ames Laboratory Facility/Area	Expiration
IA6890008950	SQG	Ames Lab #3-DOE (main campus)	None
* IAD984617605	CESQG	Ames Lab #1-DOE (Waste Handling Facility)	None
* IA0000365973	SQG	Ames Lab #2-DOE/ISU (chemical disposal site)	None

* Both sites have been designated by the EPA as “non-generators”.

Table 4.4-2, Ames Laboratory Air Emission Sources

Description	Permit Number	Location	Regulatory Citation
Paint Spray Booth – Construction Permit	96-A-1282	Paint Booth	567 IAC 22.3 and IAC 23.4(13)
Sand Blaster – Construction Permit	96-A-1283	Mechanical Maintenance Building	567 IAC 22.3 and IAC 23.4(6)
Graphite Lathe – Exempt	NA	Metals Development Building	567 IAC 22.1(2)u
Dust Collector – Exempt	NA	Wood Shops	567 IAC 22.1(2)u
Compactor – Small Unit Exemption	NA	Mechanical Maintenance Building – RWA	567 IAC 22.1(2)w(l)
Engineering Services Shop Exhaust – Exempt	NA	Metals Development Building – 160	567 IAC 22.1(2)u
Engineering Services Shop Welders – Exempt	NA	Metals Development Building – 160	567 IAC 22.1(2)p
Diesel Generators – Exempt	NA	Wilhelm Hall, SIF	567 IAC 22.1(2)r
Canopy Hood in Paint Shop – Small Unit Exemption	NA	Paint Shop	567 IAC 22.1(2)w(1)
Laboratory Fume Hoods – Exempt	NA	SPH, HWH, MD, SIF	567 IAC 22.1(2)s

5.0 ENVIRONMENTAL MANAGEMENT SYSTEM (EMS)

The Laboratory’s environmental aspects have not drastically changed over the past several years, and with the integration of the EMS into the Laboratory’s ISMS there are mechanisms in place to detect new environmental aspects and impacts. The Laboratory has an Environmental Management System Steering Committee that consists of researchers, safety personnel, facilities personnel, and transportation and procurement personnel. This committee is tasked with recommending targets and objectives to the Laboratory’s Executive Council. These recommendations help meet DOE sustainability goals and other Laboratory EMS goals. The Laboratory achieved a 2018 goal of hosting a seminar to recognize Earth Day by bringing in a representative from the city of Ames to raise awareness of renewable energy and energy conservation best practices. The committee has identified longer term goals that remain ongoing initiatives, such as the objectives reported within the [Site Sustainability Plan](#).

5.1 Environmental Operating Experience and Performance Measurement

In calendar year 2018, Ames Laboratory reported to DOE-AMSO through the Laboratory’s Performance Evaluation and Measurement Plan (PEMP), the Facility EMS Annual Report Data and DOE’s Sustainability Dashboard. The Laboratory was awarded a B+ for the objective “Provide Efficient and Effective Environmental Management System” within the PEMP report card. As reported through the Facility EMS Annual Report and DOE Sustainability Dashboard, the Laboratory met 80% of the Site Sustainability Plan objectives.

The Laboratory’s EMS was last reviewed by DOE-CH in April, 2018 to determine conformance to ISO14001:2015. The Laboratory maintains a strong recycling program and culture and strives to help meet DOE sustainability goals. The review team identified one minor nonconformity based on the requirements of ISO 14001:2015, as well as three opportunities for improvement.

The nonconformities were addressed through corrective actions that have been completed and the identified opportunities for improvement have been integrated into the EMS.

Environmental operating experiences in 2018 were categorized as local events and have been summarized in section 4.1.

5.2 Accomplishments, Awards and Recognition

Ames Laboratory was recognized for three strengths during the April 2018 EMS conformance assessment. These strengths included direct leadership involvement, strong internal communication, and establishment of an internal team for process optimization and benchmarking best practices of other labs.

6.0 ENVIRONMENTAL RADIOLOGICAL PROTECTION PROGRAM

6.1 Radiological Discharges and Doses

There were no point source releases from the Ames Laboratory complex in 2018. Diffuse source emissions were limited to low-level waste activities and renovation activities. Emissions from these activities were minimized or eliminated by engineering devices/structures, when necessary (e.g. containment cells with HEPA filtration).

The annual radionuclide NESHAP report was prepared using the guidance in 40 CFR 61.94. According to the guidance, and based on the isotope inventory in curies per year used at the Laboratory, air emissions were not required to be monitored. IDNR and Iowa Department of Public Health (IDPH) do not require permits or monitoring for laboratory fume hoods under Chapter 20 IAC 567 22.1(2) (1). However, Appendix D to 40 CFR Part 61 does provide a method for estimating the radionuclide emissions for a year, for reporting purposes, based on the amount of radionuclides in curies used at a facility. Prescribed parameters were used to calculate potential dose equivalent to the public due to estimated radionuclide emissions from the Laboratory (See correspondences in Appendix A).

6.2 Clearance of Property Containing Residual Radioactive Material

DOE O 458.1, Radiation Protection of the Public and the Environment, was put into the Laboratory's contract on October 22, 2012. The Environmental Radiation Protection Plan (Plan 10200.041) demonstrates that the Laboratory has plans, policies and procedures in place for monitoring the release of radiological contaminated property according to DOE O 458.1. Any real and/or personal property released to the public in 2018 was evaluated prior to release and found to be lower than the authorized limits as described in the above mentioned plan.

Ames Laboratory, DOE, and ISU have addressed all known contaminated sites in or near the City of Ames. The IDNR has released a total of 12 Inactive Waste Sites (See Correspondence in Appendix B). The status of the sites released follows.

<u>Site</u>	<u>Release Status</u>	<u>Date Released</u>
Old Sewage Plant	Unrestricted use	1995
Grand Avenue Underpass	Unrestricted use	1996
Ames Municipal Cemetery	Unrestricted use	1996
Applied Sciences Complex	Unrestricted use	1996
Block House	Unrestricted use	1996
Little Ankeny Debris	Unrestricted use	1996
Annex I	Approved for current use	1996
Annex II	Approved for current use	1996

Ames Municipal Airport	Approved for current use	1996
Chemical Disposal Site	Unrestricted use	1998
Former Iowa State College Dump Site	Unrestricted use	2001
Fire Service Institute Training Area	Unrestricted use	2002

Additional information regarding these sites can be found in previous [Site Environmental Reports](#), by contacting Ames Laboratory Communications at 515-294-1048, or by visiting the Laboratory's [Web page](#).

6.3 Unplanned Radiological Releases

There were no planned, unplanned or accidental radiological releases from Ames Laboratory in 2018.

6.4 Environmental Radiological Monitoring

Ames Laboratory performed no storm water, sanitary sewer water, or environmental air sampling in 2018 as there were no activities that warranted monitoring. The City of Ames and ISU sampled the University's wastewater effluent using EPA protocols and methods in 2018 as part of ISU's pretreatment agreement with the City of Ames.

7.0 NON-RADIOLOGICAL ENVIRONMENTAL MONITORING

The Laboratory has two air permits (paint booth and a sandblaster) that require mass balance monitoring. An annual log is required for each air permit. Material quantities and duration are included in the log. The log is monitored and reviewed to verify the Laboratory is not exceeding its permitted limits. Limits were not exceeded in 2018.

The Laboratory does not perform any other non-radiological monitoring (i.e. air, water or soil sampling).

8.0 GROUNDWATER PROTECTION PROGRAM

There are no current Ames Laboratory activities that pose a hazard to groundwater or surface water. The Laboratory has no underground storage tanks. Three DOE owned monitoring wells were plugged and abandoned in June 2005. Currently there is no monitoring of the groundwater and ISU is not required to monitor groundwater on the main campus.

9.0 QUALITY ASSURANCE

Quality Assurance at Ames Laboratory is implemented through the Quality Assurance Program Plan (Plan 10200.026). This plan outlines the policies, procedures, training and inspection, and testing requirements for equipment and processes within the Laboratory.

Radioactive sources and solutions used to calibrate radiation-detection instrumentation are obtained with quantitative calibration directly traceable to the National Institute of Standards and Technology. Ames Laboratory's quality assurance effort relies on established U.S. EPA, IDNR, IDPH, and DOE regulations, standards and methods. This applies to both radioactive and non-radioactive environmental sampling and analyses.

Ames Laboratory's air quality assurance procedure consists of maintaining an exhaust hood inventory, maintaining a radiological material balance, tracking chemicals, and waste collection and management. These measures determine if the Laboratory has a source in need of monitoring or permitting, in

accordance with IDNR guidance. The Laboratory uses EPA's COMPLY modeling program, when necessary, to produce the annual NESHAP report (See Appendix A).

In 2018, the Laboratory continued to apply its Readiness Review (Procedure, 10200.010) process to new or significantly modified research activities for risk identification, categorization, and ESH review of activities. This review helps prevent and/or control releases of hazardous materials to the environment. It was developed to ensure that an appropriate level of rigor, commensurate to the risk associated with an activity's hazards, is applied to the activity's ESH review. Thirty activities were reviewed and approved in 2018. Approved activities are reviewed on a one, three, or five year cycle based on the hazard level assigned to that activity.

Line management holds Laboratory Group Leaders responsible for ensuring measuring and test equipment is of the proper type, accuracy, and tolerance to accomplish the specified requirements.

10.0 REFERENCES

1. Ames City Manager's Office, demographic information.
2. Ames Laboratory Site Environmental Reports.
3. City of Ames and ISU Pretreatment Agreements.
4. DOE Order 231.1B, Environment, Safety and Health Reporting.
5. DOE Order 458.1, Radiation Protection of the Public and the Environment.
6. DOE Order 474.2, Nuclear Material Control and Accountability.
7. DOE Order 436.1, Departmental Sustainability.
8. Characterization Report for the Ames Laboratory Chemical Disposal Site, Iowa State University, September 1998.
9. Iowa Administration Code, Rule 567, Chapters 20-24 and 28, "Air Quality."
10. Iowa Administration Code, Rule 567, Chapter 60, "Wastewater Treatment and Disposal: Definitions, Rules of Practice."
11. Iowa Administration Code, Rule 567, Chapter 61, "Water Quality Standards."
12. Iowa Administration Code, Rule 567, Chapter 100, 101, 109, 118, 119, "Solid Waste Management and Disposal."
13. Iowa Administration Code, Rule 567, Chapter 131, "Notification of Hazardous Conditions."
14. Iowa Administration Code, Rule 567, Chapter 133, "Rules for Determining Cleanup Actions and Responsible Parties."
15. 10 CFR Part 1021, "National Environmental Policy Act Implementation Procedures."
16. 10 CFR Part 835, "Occupational Radiation Protection."
17. 29 CFR Part 1910.120, "Hazardous Waste Operations and Emergency Response."
18. 40 CFR Part 63, "National Emission Standards for Hazardous Air Pollutants for Source Categories."
19. 40 CFR Part 82, "Protection of Stratospheric Ozone."
20. 40 CFR Part 112, "Oil Prevention; Spill Prevention, Controls and Countermeasures."
21. 40 CFR Part 131, "Water Quality Standards."
22. 40 CFR Part 141, "National Primary Drinking Water Regulations."
23. 40 CFR Parts 260-264 (subpart S), 265 and 268, "Hazardous Waste Implementing Rules."
24. 40 CFR Part 279, "Standards for the Management of Used Oil."

25. 40 CFR Part 300, "National Oil and Hazardous Substances Pollution Contingency Plan."
26. 40 CFR Part 302, "Designation, Reportable Quantities and Notification."
27. 40 CFR Part 355, "Emergency Planning and Notification."
28. 40 CFR Part 761, "Polychlorinated Biphenyls (PCBs) Manufacturing, Processing Distribution in Commerce, and Use Prohibitions."
29. Consent Agreement and Consent Order, executed February 27th, 1996.

11.0 LIST OF ACRONYMS

ALCATS:	Ames Laboratory Corrective Action Tracking System
AMSO:	Ames Site Office
CAA:	Clean Air Act and Amendments
CAG:	Community Advisory Group for Ames Laboratory environmental activities
CDS:	Chemical Disposal Site
CERCLA:	Comprehensive Environmental Response, Compensation and Liability Act
VSQG:	Conditionally exempt small quantity generator
CFR:	Code of Federal Regulations
CG:	Concentration guide, DOE derived
CH:	Chicago Operations Office of the U.S. Department of Energy
Ci:	Curie, 3.7E10 disintegration's per second
CWA:	Clean Water Act
CX:	Categorical exclusion, a class of activities determined to have no environmental impact
DOE:	U.S. Department of Energy
EA:	Environmental assessment
EIS:	Environmental impact statement
EMR:	Environmental management review
EMS:	Environmental management system
EPA:	U.S. Environmental Protection Agency
EPCRA:	Emergency Planning and Community Right to Know Act
ERPP:	Environmental Radiological Protection Plan
ESA:	Endangered Species Act
ESH:	Environment, Safety, Health and Assurance office of Ames Laboratory
FFCA:	Federal Facilities Compliance Act
FIFRA:	Federal Insecticide, Fungicide and Rodenticide Act
FS:	Feasibility study
FSP:	Field sampling plan
GOCO:	Government owned, contractor operated facility
HEPA:	High efficiency particulate air, a filter element or filtration system
HQ:	Headquarters of U.S. Department of Energy
IAC:	Iowa Administration Code
IDNR:	Iowa Department of Natural Resources

IDPH:	Iowa Department of Public Health
ISMS:	Integrated Safety Management System
ISU:	Iowa State University
IWS:	Inactive waste site
LDR:	Land disposal restriction
LQG:	Large quantity generator
MCL:	Maximum contaminant level
mg/L:	Milligrams per liter; equivalent to ppm
mrem:	Millirem
MS4s:	Municipal Separate Storm Sewer Systems
mSv:	Millisievert, 10^{-3} Sieverts
NEPA:	National Environmental Policy Act
NESHAP:	National Emission Standards for Hazardous Air Pollutants
NHPA:	National Historic Preservation Act
NOV:	Notice of violation
NPDES:	National Pollutant Discharge Elimination System
NRC:	Nuclear Regulatory Commission
ODS:	Ozone depleting substance
PCB:	Polychlorinated biphenyls
pCi:	Picocurie, 10^{-12} Curies
PIDS:	Performance indicator database system
QA:	Quality assurance
QAP:	Quality Assessment Program, DOE
RCRA:	Resource Conservation Recovery Act
Rem:	Roentgen equivalent man, radiation dose
RESRAD:	Residual radiation model for sites
RI:	Remedial investigation
RPP:	Radiological Protection Plan, for Ames Laboratory
SARA:	Superfund Amendments and Reauthorization Act
SDWA:	Safe Drinking Water Act
SER:	Site Environmental Report
SHPO	State Historical Protection Officer
TASF:	Technical and Administrative Support Facility, the Ames Laboratory office building
TCLP:	Toxicity Characteristic Leaching Procedure
TPQ:	Threshold-planning quantity
TRU:	Transuranic waste
TSCA:	Toxic Substances Control Act
WAS:	Work authorization system of Ames Laboratory

12.0 DISTRIBUTION

Organization

Cynthia Baebler, Manager
Ames Site Office
9800 South Cass Avenue
Argonne, IL 60439
Cynthia.baebler@ch.doe.gov

Jennifer Harling, Chief Counsel
Office of Chief Counsel
DOE Chicago Office
9800 South Cass Avenue
Argonne, IL 60439
jennifer.harling@science.doe.gov

Matthew Moury, Associate Under Secretary for Environment, Health, Safety and Security Office of Environment, Health, Safety and Security (AU-1)
1000 Independence Ave, SW
Washington, DC 20585
Matthew.Moury@hq.doe.gov

Andrew Lawrence, Deputy Associate Under Secretary for Environment, Health, Safety and Security Office of Environment, Health, Safety and Security (AU-1)
1000 Independence Ave, SW
Washington, DC 20585
Andrew.Lawrence@hq.doe.gov

Michael “Josh” Silverman, Acting Director for Office of Environmental Protection and ES&H Reporting
Office of Environmental Protection and ES&H Reporting (AU-20)
1000 Independence Ave, SW
Washington, DC 20585
Josh.Silverman@hq.doe.gov

Colette Broussard, Director for Office of ES&H Reporting and Analysis
Office of ES&H Reporting and Analysis (AU-23)
1000 Independence Ave, SW
Washington, DC 20585
Colette.Broussard@hq.doe.gov

Rosario “Ross” Natoli, Environmental Protection Specialist
Office of ES&H Reporting and Analysis (AU-23)
1000 Independence Ave, SW
Washington, DC 20585
Ross.Natoli@hq.doe.gov

Dr. Colleen Ostrowski, Environmental Protection Specialist
Office of Public Radiation Protection (AU-22)
1000 Independence Ave, SW
Washington, DC 20585
Colleen.Ostrowski@hq.doe.gov

External

Gene Gunn, Chief
USEPA Region 7
Mail Code: SEMDIO
11201 Renner Blvd.
Lenexa, KS 66219
Gunn.gene@epa.gov

Rebecca Weber
USEPA Region 7
Mail Code: ORAIO
11201 Renner Blvd.
Lenexa, KS 66219
Weber.rebecca@epa.gov

Angela Leek, Chief
Iowa Department of Public Health
Bureau of Radiological Health
Lucas State Office Building
321 East 12th Street
Des Moines, IA 50319-0075
angela.leek@idph.iowa.gov

Dr. David Inyang, Director
Environmental Health and Safety
1122 EHSSB
Iowa State University
Ames, IA 50011-3660
adinyan@iastate.edu

Senator Charles Grassley
135 Hart Senate Office Building
Washington, DC 20510-0001

Senator Joni Ernst
111 Russell Senate Office Building
Washington, D.C. 20510

Representative Steve King
2210 Rayburn Office Building
Washington, DC 20515

State Senator Herman Quirnbach
Senate Chambers
State House
Des Moines, IA 50319-0001
Herman.quirnbach@legis.state.ia.us

State Representative Lisa Heddens
State Capital
Des Moines, IA 50319
lisa.heddens@legis.state.ia.us

Ames Laboratory Community Advisory Group:

Robert (Toby) Ewing
1411 Summit Avenue
Ames, IA 50010

Joe Lynch
3700 Onion Creek Lane
Ames, IA 50014

Ames Laboratory Management and Discipline Specialists:

Laboratory Director, Dr. Adam Schwartz, adamames@ameslab.gov
Deputy Director, Dr. Thomas Lograsso, lograsso@ameslab.gov
Chief Operations Officer, Stephen Hamilton, steveham@ameslab.gov
Communications Manager, Alissa Brammer, abrammer@ameslab.gov
Intellectual Property and Technical Information, Stacy Joiner, joiner@ameslab.gov
ESH Manager, Sean Whalen, sbwhale@ameslab.gov
ESH Assistant Manager, Shawn Nelson, nelsons@ameslab.gov
Program Manager I, Sarah Morris-Benavides, sarahmb@ameslab.gov
Environmental Specialist, Dan Kayser, kayser@ameslab.gov
Radiation Safety Officer, Mike McGuigan, mcguigan@ameslab.gov
Learning & Development Coordinator, Erin Gibson, egibson@ameslab.gov
Documents & Quality Assurance Coordinator, Molly Granseth, mgrans@ameslab.gov

APPENDIX A
Air Permit Correspondences

- 1. U.S. Department of Energy Air Emissions Annual Report, Calendar Year 2016**



Ames Laboratory

Creating Materials & Energy Solutions

U.S. DEPARTMENT OF ENERGY

**U.S. Department of Energy
Air Emissions Annual Report
Calendar Year 2018**

SECTION I

Facility Information

Site Name: Ames Laboratory, Iowa State University

Operations Office: Chicago Operations

Address: 9800 South Cass Avenue
Argonne, IL 60439

Contact: Bruce Goplin Phone: 515-294-8037

Site Operator: Iowa State University

Site Address: G40 TASF, Iowa State University
Ames, IA 50011

Contact: Sarah Morris-Benavides Phone: 515-294-2153

Site Description:

The Ames Laboratory is located on the campus of Iowa State University (ISU) in Ames, Iowa. The Ames Laboratory is operated by ISU for the Department of Energy (DOE) under contract No. DE-AC02-07CH11358 in 2018. There are thirteen buildings owned by the DOE. The Ames Laboratory conducts basic and early-stage research in chemical, physical, mathematical, and engineering sciences that underlie energy technologies and other areas of national importance.



Ames Laboratory

Creating Materials & Energy Solutions

U.S. DEPARTMENT OF ENERGY

SECTION II

Methods for Dose Assessment/Air Emissions Data

- 1) There were no activities resulting in radioactive air emissions from Ames Laboratory activities during Calendar Year 2018 based on a review of research and operations.
- 2) Ames Laboratory does not have a registered radioactive air emissions unit.
- 3) Ames Laboratory's limited annual possession quantities are less than 40 CFR Part 61 Appendix E limits which demonstrates compliance with the 10 mrem/yr dose standard for the general public.

CERTIFICATION

I certify under penalty of law that I have personally examined and am familiar with the information submitted herein and based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the submitted information is true, accurate and complete. I am aware that there are significant penalties for submitting false information including the possibility of fine and imprisonment. (See, 18 U.S.C. 1001).

Name: Dr. Adam Schwartz

Title: Director, Ames Laboratory

Signature: 

Date: 1-15-19

APPENDIX B
Inactive Waste Site Correspondences

1. Letter from IDPH, Closure of nine sites, January 11, 1996
2. Letter from IDPH granting “unrestricted” release of the CDS, October 15, 1998
3. Letter from IDPH, Closure of the Former Iowa State College Dump Site, September 17, 2001
4. Letter from IDPH, Closure of the Fire Service Institute Training Area, February 26, 2002



TERRY E. BRANSTAD, GOVERNOR

DEPARTMENT OF PUBLIC HEALTH
CHRISTOPHER G. ATCHISON, DIRECTOR

January 11, 1996

Warren R. Madden
Vice President for Business and Finance
Iowa State University
125 Beardshear Hall
Ames, Iowa 50011-2038

Dear Mr. Madden:

Reference is made to your letter of January 5, 1996 in which you request our concurrence on the status of nine inactive waste sites which we possibly contaminated with radioactive materials as a result of the operation of Ames Laboratory as a DOE contractor in the past. Listed below are the sites by name and our conclusions as to the status of the site regarding closure.

1. Ames Old Waste Water Treatment Facility (WWTF): Met criteria for unrestricted use per Department letters to the city of Ames dated June 16, 1994 and February 17, 1995.
2. Grand Avenue Under Pass: Based on the data provided by DOE, ISU and data collected by this Department this area meets the criteria for unrestricted use. In fact, there is information which indicates that this area never was subjected to the spreading of contaminated sludge from the WWTF.
3. Ames Municipal Cemetery: Based on the data provided by DOE, ISU and data collected by this Department this area meets the criteria for unrestricted use. In fact, there is information which indicates that this area never was subjected to the spreading of contaminated sludge from the WWTF.
4. Applied Science Center: Based on the data provided by DOE, ISU and data collected by this Department, this area meets the criteria for unrestricted use.
5. Block House Area : Based on the data provided by DOE, ISU and data collected by this Department, this area meets the criteria for unrestricted use.
6. Little Ankeny Debris Site: Based on the data provided by DOE, ISU and data collected by this Department, this area meets the criteria for unrestricted use.
7. Annex I: Based on the data provided by DOE, ISU and data collected by this Department, this area can be used as it is now, in perpetuity, without public health concerns. However, if the site is developed for any other purpose additional surveys or sampling will be necessary to confirm that if residual radioactive material exists it is not in amounts which could be of public health concern during the developmental process.
8. Annex II: : Based on the data provided by DOE, ISU and data collected by this Department, this area can be used as it is now, in perpetuity, without public health concerns. However, if the site is developed for any other purpose additional surveys or sampling will be necessary to confirm that if residual radioactive material exists it is not in amounts which could be of public health concern during the developmental process.

LUCAS STATE OFFICE BUILDING / DES MOINES, IOWA 50319-0075 / 515-281-5787
FAX # (515) 281-4958 / TDD-DEAF SERVICES #(515) 242-6156

Page 2
Madden, Warren R.
January 11, 1996

9. Ames Municipal Airport: Based on the data provided by DOE, ISU and data collected by this Department, this area can be used as it is now, in perpetuity, without public health concerns. However, if the site is developed for any other purpose additional surveys or sampling will be necessary to confirm that if residual radioactive material exists it is not in amounts which could be of public health concern during the developmental process.

Based on the above, it is my opinion that we concur with the University's decision to bring the nine sites to closure with the special provisions placed on Annex I, II and the Airport. I would like to take this opportunity to thank you, the ISU Staff and the Ames Laboratory Staff who have assisted in working through the long laborious process of reading the conclusions. We certainly look forward to working with all of you in the future. If you have question regarding the above, please do not hesitate to contact me.

Sincerely,



Donald A. Flater, Chief
Bureau of Radiological Health
(515) 281-3478

cc: E. Sobottka, ISU
Tom Newman, City of Ames
Dr. Tom Barton, Ames Laboratory

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TERRY E. BRANSTAD, GOVERNOR

DEPARTMENT OF PUBLIC HEALTH
CHRISTOPHER G. ATCHISON, DIRECTOR

October 15, 1998

Emery Sobotka
Iowa State University
118 Agronomy Laboratory
Ames, Iowa 50011-3200

Dear Mr. Sobotka:

This correspondence refers to the "Characterization Report for the Ames Laboratory Chemical Disposal Site—Iowa State University." You submitted that report to us under cover of your letter dated September 30, 1998.

We have read and reviewed the report and analyzed the data. We agree with your conclusions and recommendations.

The site, known as the Ames Laboratory Chemical Disposal Site, meets the standards for unrestricted use. Additionally, we concur with your recommendation that the groundwater sampling frequency be reduced to annual. This sampling will continue until 2002.

If you have any questions or comments, please call Dan McGhee or me at (515)281-7007.

Sincerely,

Donald A. Fiater, Chief
Bureau of Radiological Health

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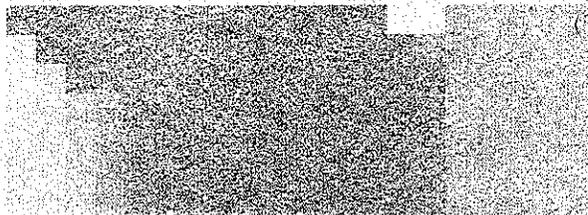
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STATE OF IOWA

THOMAS J. VILSACK
GOVERNOR

SALLY J. PEDERSON
LT. GOVERNOR

DEPARTMENT OF PUBLIC HEALTH
STEPHEN C. GLEASON, D.O., DIRECTOR

September 17, 2001

David Inyang, Ph.D., RSO
Iowa State University
118 Agronomy Lab.
Ames, Iowa 50011

Dear Dr. Inyang:

This correspondence refers to your letter to me dated August 22, 2001. In that letter you enclosed a report entitled, "Review and Assessment of the Former Iowa State College Dump Site." This report detailed the actions taken to assess the radiological hazard at that site. Your letter requested that we review and comment on the report.

The report references and analyzes the results of soil sampling at the former dumpsite. We have reviewed this data and your conclusions. We agree that the data does show that the former Iowa State College Dump Site meets the standards for unrestricted use.

We wish to remind you that our conclusions speak only to radiological standards and do not address heavy metals or organic compounds.

If you have any questions, please contact Dan McGhee at 515-725-0305 or me.

Sincerely,

Donald A. Flater, Chief
Bureau of Radiological Health
(515) 281-3478

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NUCE IDPH Correspond



STATE OF IOWA

THOMAS J VILSACK
GOVERNOR

SALLY J PEDERSON
LT GOVERNOR

DEPARTMENT OF PUBLIC HEALTH-
STEPHEN C GLEASON D O DIRECTOR

February 26, 2002

David Inyang, Ph D
Director, Environmental Health and Safety
Iowa State University
118 Agronomy Lab
Ames, Iowa 50011-3200

RE Release of site for unrestricted use

Dear Dr Inyang

This correspondence refers to your letter, dated February 20, 2002, to me In that letter you transmitted the "Final Status Survey Report for Fire Service Institute Training Area Iowa State University" You also requested "the site be released for unrestricted use"

We have reviewed the report and agree with your conclusion that the site meets the standards for unrestricted use You may refer to these standards in the Iowa Administrative Code 641-40 29(136C) We cannot, however, "release" this site because it was never restricted We reiterate, though, that the data demonstrates compliance with unrestricted use

If you have any questions, please contact Dan McGhee at 515-725-0305 or me

Sincerely,

Donald A. Flater, Chief
Bureau of Radiological Health
515-281-3478
515-725-0318 - FAX
dflater@idph.state.ia.us

DAF/rk

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Bureau of Radiological Health 401 SW 7th Street Suite D Des Moines IA 50309 Internet Address idph.state.ia.us/dsr/h.htm

APPENIX C
EPA and DOE Correspondences

- 1. DOE-AMSO memorandum approving Laboratory's EMS, June 28, 2009**
- 2. EPA letter (RCRA Inspection), April 27, 2006**



Department of Energy

Ames Site Office
9800 South Cass Avenue
Argonne, Illinois 60439

December 9, 2015

MEMORANDUM FOR AMES SITE OFFICE

FROM:

CYNTHIA K. BAEBLER
MANAGER

A handwritten signature in cursive script that reads "Cynthia K. Baebler".

SUBJECT:

DECLARATION THAT AMES LABORATORY ENVIRONMENTAL
MANAGEMENT SYSTEM CONFORMS TO THE ISO 14001 STANDARD

This memorandum documents that the Environmental Management System (EMS) for Ames Laboratory conforms to the International Organization for Standardization's (ISO) 14001:2004 standard as required by DOE Order 436.1.

A formal assessment of the EMS was conducted February 9-11, 2015 by a qualified party outside the control or scope of the Laboratory's EMS per the ISO standard.

There were no major nonconformities. The two minor nonconformities that have been addressed through the Ames Laboratory EMS Corrective Action Plan (CAP) and three of the four Opportunities for Improvement (OFI) have also been addressed as outlined in the CAP, with the final OFI targeted for completion by January 15, 2016.

The senior Ames contractor manager accountable for implementation of the EMS has declared conformance of the EMS to the ISO 14001:2004 standard.

On the basis of this declaration, and my oversight of the contractor's EMS at this site, I declare that this EMS conforms to ISO standard as required by DOE O 436.1, Section 4, Paragraph c.

cc:

Sat Goel, SC-31, GTN, HQ

Teralyn Murray, SC-CH

Adam Schwartz, Director, Ames Laboratory

Sean Whalen, Manager, ESH&A, Ames Laboratory



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION VII
901 NORTH 5TH STREET
KANSAS CITY, KANSAS 66101

Tom Barton
Director
Ames Laboratory #3, DOE
G40 TASF Iowa State University
Ames, Iowa 50011

19 JUN 2006

Dear Mr. Barton:

RE: Ames Laboratory #3, DOE
Ames, Iowa
RCRA ID No. IA6890008950

On April 27, 2006, a representative of the U. S. Environmental Protection Agency (EPA) inspected your facility. The inspection was conducted under the authority of Section 3007 of the Resource Conservation and Recovery Act (RCRA). A copy of that inspection report is enclosed.

I have reviewed the inspection report and determined that no violations of RCRA were documented. Therefore, no further action concerning this matter is necessary at this time. Please note that EPA reserves its enforcement authorities, including assessment of penalties, for violations that occur at any time.

I would like to remind you that your facility is responsible for maintaining compliance with all applicable hazardous waste regulations. If there are any questions regarding this matter, please contact James Terry working under a grant at EPA at (913) 551-7958.

Sincerely,

A handwritten signature in purple ink, appearing to read "Edwin G. Buckner".

Edwin G. Buckner, P.E.
Compliance Officer
RCRA Enforcement and State Programs Branch

Enclosure

cc: Cal Lundberg
IDNR