3.4 Hazardous Materials (Chemical and Biological)

Safety Initiatives in Place Prior to Review

The Occupational Safety and Health Administration (OSHA) regulates the safe-use of hazardous materials through its many standards in 29 CFR 1910 such as: Hazardous Materials (Subpart H), Personal Protective Equipment (Subpart I), and Toxic and Hazardous Substances (Subpart Z). In addition, the Environmental Protection Agency (EPA) also regulates the environmental aspects of hazardous materials through its standards in 40 CFR Parts 260-399, which include the requirements for hazardous waste, threshold planning quantities, and spill reporting quantities. Other EPA regulations affecting the use of hazardous materials include the Clean Air Act, Clean Water Act, the Resource Conservation and Recovery Act, and the Federal Insecticide, Fungicide, and Rodenticide Act.

For many years, APHIS has been instrumental in disseminating regulatory and safety information and providing assistance to its various programs and facilities in establishing compliant and effective programs. Leading this effort is the APHIS Safety, Health, and Employee Wellness Branch (SHEWB) with a staff which includes an Industrial Hygienist and an Environmental Protection Manager to assist with issues regarding hazardous materials. The principal written guidance is the APHIS Safety and Health Manual, which has chapters covering OSHA and EPA requirements.

The use of hazardous materials within WS falls into three distinct categories: operations, research, and manufacturing. Within WS operations, the use of hazardous materials is mainly limited to the use of registered or formulated products, which are primarily regulated by the registration labeling requirements and the individual states according to their own pesticide applicator requirements. Within the areas of WS research (National Wildlife Research Center (NWRC), Fort Collins, CO) and manufacturing (Pocatello Supply Depot (PSD), Pocatello, ID) the use hazardous materials such as laboratory chemicals and/or pesticide ingredients is much more prevalent, and these must follow a broader range of regulations and requirements. Both the PSD and NWRC have developed their own specific Standard Operating Procedures (SOP) for hazardous materials and activities at their facilities.

Previous audits of the PSD are as follows:

- An Environmental Compliance Audit conducted on August 17-18, 2004 by the Naval Facilities Engineering Command, applauded the efforts WS has taken to minimize waste generated from the production process.

- An Industrial Hygiene Exposure Assessment conducted on May 5-6, 2005 by Federal Occupational Health, concluded that the overall ventilation and indoor air quality was effective and that worker exposure was well below the applicable standards or recommendations.

- An Oversight Review of Hazardous and Solid Waste by the USDA Hazardous Waste Program Group conducted on July 10, 1995, stated that no imminent hazards or major noncompliance were observed.

Previous audits at NWRC are as follows:

- Several evaluations of the NWRC Biosafety Level 3 (BSL-3) laboratory were conducted in 2006 and 2007 by different experts including the Colorado State University's Biosafety Officer and the National Veterinary Services Laboratory Biosafety Officer. All evaluations helped the NWRC obtain the final certification and permit for operating a BSL-3 laboratory.

- An Integrated Environmental Management System (IEMS) Review conducted by BMT Entech on March 14-15, 2006, which was intended to cover all aspects of environmental, health and safety, security management and compliance activities at NWRC. This produced an IEMS Program Manual and Guidance document for the NWRC.

- A Personnel Management Evaluation Site Visit conducted by the APHIS Safety, Health, Environmental, and Security Team on July 19, 2000, which categorized the NWRC safety program as excellent.

Safe and proper use of hazardous materials at both the PSD and the NWRC, and the safety and health of the employees who work with those materials are the top two management priorities. This is evidenced by the outstanding safety, health, and environmental records at both of these facilities.

Examples of critical program elements already in place are as follows:

- NWRC appointed a Safety and Occupational Health Specialist. This specialist has served for over 15 years as the Safety Officer, Chemical Hygiene Officer, Biosafety Officer (CHO), and Local Radiation Protection Officer.
- A highly developed selection of Standard Operating Procedures at the NWRC which includes detailed procedures on laboratory safety, chemical inventory, hazardous waste collection and disposal, and emergencies.
- A voluntary Occupational Medical Monitoring Program for NWRCs employees.
- Fully permitted Biosafety Level 2 and Biosafety Level 3 laboratories.

In addition to the chemical laboratories, the NWRC also has several biological laboratories that contain biohazardous materials and agents. The Centers for Disease Control and Prevention's (CDC) Biosafety in Microbiological and Biomedical Laboratories (BMBL) provides the standard which provides the recognized guidance for proper facilities, practices, and procedures for working with biohazardous agents. To receive and possess biohazardous agents, an inspection and authorization permit must first be obtained from USDA APHIS. The NWRC has successfully obtained permits for agents such as rabies virus, *Vaccinia*

virus, low pathogenic avian influenza virus, West Nile virus, St. Louis encephalitis virus, and transmissible spongiform encephalopathys. Most of those agents are classified as Biosafety Level 2. However, the NWRC recently redesigned an existing suite of laboratories to Biosafety Level 3 enabling the NWRC to safely conduct research on more virulent agents that affect wildlife.

Review Activities
Review of the WS hazardous materials programs at the NWRC and PSD was conducted by Century Environmental Health (CEH) under contract with Federal Occupational Health (FOH). Century Environmental Health is a private firm that specializes in industrial hygiene, toxicology and risk assessment. During the review, a CEH Industrial Hygienist examined all WS Directives, documents and manuals along with procedures and equipment for storage, inventory, use and disposal of chemicals and biological hazards, employee adherence to policy and safety procedures, use of personal protective equipment, and other applicable safety elements. The hygienist also interviewed WS management and laboratory and manufacturing personnel. As part of the review the CEH team conducted inspections at the National Wildlife Research Center and the Pocatello Supply Depot. As noted by the reviewer, the PSD and NWRC have very different missions, staffing and potential hazards.

Summary of Review Findings
Safety programs at the facilities are strong, comprehensive, and well implemented. No major program gaps or concerns were found. Environmental health and safety (ESH) programs can never be perfectly implemented in any organization; thus, the expectation is that they perform on a satisfactory level and strive for continual improvement. Environmental safety and health programs met the satisfactory level overall but have several areas where improvement can be made.

Environmental Safety and Health operations at both facilities are essentially in compliance with federal requirements and in conformance to CDC guidelines and other recommended work practice guidelines. With operations that involved so many staff members and diverse work activities improvements can be made.

Areas with the best performance included waste management, operation of BSL-2 and BSL-3 laboratories, written plans and SOPs, exposure controls, medical monitoring, and spill response preparedness. Areas needing improvements included training, inventory management/hazard communication, labeling, ventilation systems, chemical hygiene, and staff resources. While all of the recommendations in the final report should be considered and implemented by WS when feasible, the more immediate needs include the following recommendations.

Priority Recommendations

1. Formalize training programs for each facility or common job type in an SOP including initial and on-going training for each area.

2. Conduct job hazard analysis for each potentially hazardous task. For jobs where hazards are indicated by job hazard analysis, safety procedures should be developed by the facility's safety manager in cooperation with the project manager.

3. Periodically inspect areas where hazards exist to verify that work practices and controls are properly implemented. These inspections should be conducted and documented by the safety manager

4. Provide junior level support to the CHO.

5. Consider out-sourcing environmental compliance work at the PSD that can be performed on a periodic (e.g. quarterly) basis, while continuing to perform the day-to-day recordkeeping that flows into the in-house periodic compliance report systems.

6. Investigate operational parameters for pressure drop on the HEPA filter. Develop a means of checking for proper pressure drop and change schedules for pre-filters and HEPA filters, and recordkeeping system for these activities.

7. Determine the compliance requirements for filter types, filter-change criteria, and pressure drops. Include these criteria in SOP for operation of the exhaust filter system. Develop recordkeeping on filter changes and (optionally) on pressure drops at BSL-3 entrance and filter bank.

8. Develop computerized chemical inventory systems where they are not in place at the PSD and NWRC.

9. Implement an on-line MSDS system for facilities with computerized inventories. This should be integrated into the USDA-wide chemical inventory system if the USDA system will be completed in the near future.