



Environmental Audit

**Wichita State University
1845 Fairmount St.
Wichita, Kansas 67260**

Conducted by:

**Phillip L. Hayden, Ph.D., P.E., CIH
True North Thinking, LLC
593 Congress Park Drive
Dayton, OH 45459**

**937 438 3010 office
937 477 9909 mobile**

July 2016



TABLE OF CONTENTS

1.0	INTRODUCTION	1
2.0	REGION 7, US EPA DRAFT CONSENT AGREEMENT	1
3.0	WICHITA STATE UNIVERSITY	2
4.0	PRELIMINARY REVIEW	2
5.0	HAZARDOUS WASTE AUDIT	3
6.0	RESULTS OF HAZARDOUS WASTE AUDIT	4
	Attachment A . Protocol for Conducting Audits	7
	Attachment B . RESUME	28

1.0 INTRODUCTION

The U.S. Environmental Protection Agency (EPA) Region 7 office in Kansas City and the Kansas Department of Health and Environment (KDHE) performed a Resource Conservation and Recovery Act (RCRA) Audit of hazardous waste practices at Wichita State University (WSU) during June 2014. The University recently received a Draft Consent Agreement and Final Order, US EPA Region 7, Lenexa, Kansas, regarding the results of the Audit, which included violations.

To mitigate potential fines, the U.S. EPA has a policy, stated in a Memorandum entitled, Issue of the 2015 Update to the 1998 U.S. Environmental Protection Agency Supplemental Environmental Projects Policy, March 10, 2015. Supplemental Environmental Projects (SEP) is an environmentally beneficial project or activity that is not required by law, but that a defendant agrees to undertake as part of the settlement of an enforcement action. There are seven projects, which are suitable to the U.S. EPA, which include:

- Public Health;
- Pollution Prevention;
- Pollution Reduction;
- Environmental Restoration and Protection;
- Assessments and Audits;
- Environmental Compliance Promotion; and
- Emergency Planning and Preparedness.

WSU contracted with Philip L. Hayden, Ph.D., P.E., CIH, of True North Thinking, LLC, Dayton, Ohio, to perform an environmental audit to identify environmental issues of noncompliance and to suggest various SEPs that would comply with the EPA's definitions of suitable projects. A short resume is included in Attachment B.

2.0 REGION 7, US EPA "Draft Consent Agreement and Final Order".

The Consent Agreement listed 13 categories which the agency alleged that WSU did not comply with RCRA regulations. These categories were.

- 1 Failure to conduct a Hazardous Waste Determination;
- 2 Failure to Meet Generator Requirements
- 3 Failure to label Satellite Accumulation Containers with the words, Hazardous Waste
- 4 Failure to label Containers of Hazardous Waste with the words, Hazardous Waste
- 5 Failure to keep Waste Containers closed
- 6 Failure to comply with Tank System Requirements
- 7 Treatment of Hazardous Waste without a Permit
- 8 Disposal of Hazardous Waste Without a Permit
- 9 Failure to Comply with the Manifest System
- 10 Failure to Properly Manifest Off-site Shipments of Hazardous Waste Oil
- 11 Failure to Comply with Land Disposal Restriction Requirements
- 12 Failure to Label Used Oil Containers
- 13 Failure to Clean Up Used Oil Residues

These 13 categories can basically be lumped into five basic areas:

- Failure to complete appropriate paperwork;
- Failure to label containers properly;
- Failure to keep containers closed;
- Treating and Disposing of Hazardous Waste (wipes containing solvent); and
- Failure to clean-up a small oil spill and stain.

Disposal of solvent wipes - It should be noted that the KDHE Technical Guidance Document HW-1995-G2, ~~%Solvent-Contaminated Wipes+~~ was revised 05/14/2015, and reflected the U.S. EPA revised ~~%RCRA Hazardous Waste Management System: Identification and Listing of Hazardous Waste: Conditional Exclusion From Hazardous Waste and Solid Waste for Solvent-Contaminated Industrial Wipes+~~ October 2013. It is not known whether the Kansas legislature adopted this EPA regulation. The question is whether the solvent wipes are a hazardous waste which should be treated as a treating and disposing issue or a non-hazardous waste container issue, with failure to be closed and labeled.

3.0 WICHITA STATE UNIVERSITY

WSU is a major university with 15,000 students that provides a broad range of education and research services. The University has a total of 85 building in the inventory, with over 50 building located on the Campus. The campus facilities require buildings with a broad range of activities to carry out its missions of advancing knowledge in the areas of education, research and leadership. A list of activities managed by the University include:

- Classrooms;
- Offices;
- Laboratories;
- Research;
- Auditorium;
- Athletics;
- Storage;
- Police Response;
- Fire Response;
- Publications / Printing;
- Medical Facilities;
- Utilities, including Auto Repair;
- Landscaping;
- Food Service; and
- Dormitories.

WSU has four satellite locations:

- WSU South is located at 200 West Greenway in Derby, Kansas, began offering Wichita State University coursework in January 2008;
- WSU West is located at 3801 North Walker in Maize, Kansas. This 9 acre (**3.6 ha**) campus hosts 80-100 university classes each academic semester;
- Wichita State University's 24,000-square-foot WSU West, located at 3801 Walker Ave. in west Wichita features 13 classrooms that range in capacity of 35-70 students, a computer lab, general science lab, interactive distance learning classroom, lounge and administrative support space; and
- WSU Old Town is a complex of facilities and services located in the popular downtown Wichita entertainment district. The complex comprises office space in three buildings located at 121 N. Mead, and buildings at 213 N. Mead and 238 N. Mead.

The Eugene M. Hughes Metropolitan Complex was acquired in 1997, the 73,313-square-foot Hughes Metropolitan Complex features the 1,750-seat Roger Lowe Auditorium, the 145-seat Frederick Sudermann Commons and the Richard Welsbacher Experimental Theater. The complex also has a gymnasium, an 80-seat meeting room and several classrooms. The facility houses the Division of Continuing Education,

4.0 PRELIMINARY REVIEW

Dr. Hayden visited the Wichita State University Campus during May 4 . 12, 2016, and June 4 . 16, 2016. During this time, he inspected over 30 buildings, interviewed members of the EH&S Group, persons in charge of hazardous waste activities in Chemistry, Biology, NIAR, Art and Engineering and Legal. Evaluations were conducted of the operations on Campus and in remote facilities with regard to the following EPA laws, and include:

Clean Air Act (CAA) . There are no source or fugitive air emissions discharges in any of the WSU Facilities that require an air pollution permit.

Clean Water Act (CWA) . There are **no** wastewater discharges to the Wichita sanitary sewers that require a pretreatment permit. Permits are obtained for storm water runoff issues for new construction now underway at the old golf course just east of the Campus.

Resource Recovery and Recovery Act (RCRA) . There are a number of departments that Generate Hazardous Waste, including Chemistry, Biology, Art, Engineering, Utilities and National Institute for Aviation Research (NIAR). WSU is a Large Quantity Generator and one of the NIAR operations at the Coliseum is a Small Quantity Generator. As a result of the hazardous waste activities, just about all of the Dr. Hayden's time was devoted to auditing these activities.

Solid Waste Disposal Act . Solid waste is collected at each of the buildings and transported to a central location. Cans and bottles are also collected separately and recycled.

Emergency Planning and Right to Know Act (EPCRA) . WSU does not store hazardous chemicals in quantities enough to trigger notifications under this act. However, a significant amount of hazardous and flammable chemicals are inventoried, especially in McKinley Hall (Chemistry). The local fire department has been notified of these chemicals and basically, in the event of a fire, fire responders may not enter the building.

Superfund (CERCLA) . To the best of everyone's memory, WSU has not illegally disposed of regulated waste or sent hazardous waste to a TSDf that was implicated in a Superfund. However, a recommendation to the EH&S Group was that all transporters and TSDf's must be audited to ensure a clean and compliant operation plus they have all of the proper insurances. Due to Cradle to Grave regulations, WSU would become liable if their TSDf would end up in a Superfund.

Storm Water . WSU has initiated a number of construction projects in recent years and has complied with and obtained permits for all projects with regard to erosion control and storm water runoff.

5.0 HAZARDOUS WASTE AUDIT

The EPA document, "Protocol for Conducting Environmental Compliance Audits for Hazardous Waste Generators under RCRA", EPA 305-B-01-003, June 2001, was used as a template for conducting the Hazardous Waste Audit. The completed document is included in Attachment A. This document includes protocols that cover all the RCRA regulations that apply to a Generator. The protocols in the original document include a section referencing the specific 40 CFR 261-268 regulations. A review of updated RCRA laws and regulations indicated there had been few, if any major changes since 2001.

The protocols are numbered from **HW.1.1 to HW.500.1** and cover such topics as Small Quantity Generators (SQGs), Large Quantity Generators (LQGs), Satellite Areas, Containers, and Labeling.

For each protocol, there is a short or very long explanation of the meaning of the regulation cited. All of the completed protocols are included in Attachment A. An Example of the template, with protocols **HW.40.1** and **HW.40.2**, is shown in Table 1.0. This list of protocols was imported into WORD and the Auditor's comments were included in the box under Reviewer. To truly understand the protocols, the reader should download and print EPA 305-B-01-003, which includes the detailed explanations of the regulations cited in the box - **Reviewer Checks**, and may require up to 4 pages to cover all of the nuances of a particular protocol.

Table 1.0 – Example of Hazardous Waste Audit Checklist

Regulatory Requirement or Management Practice	Reviewer Checks
SMALL QUANTITY GENERATORS (SQGs) HW.40 Personnel Training	
HW.40.1. SQG personnel are required to be thoroughly familiar with proper waste handling and emergency procedures (40 CFR 262.34(d)(5)(iii))	Verify that personnel are thoroughly familiar with waste handling and emergency procedures relevant to their responsibilities during normal facility operation and emergencies.
HW.40.2. Training records should be maintained for all SQG staff who manage hazardous waste (MP).	Verify that training records include the following: - job title and description for each employee by name - written description of how much training each position will obtain - documentation of training received by name. Determine if training records are retained for three years after employment at the facility.

6.0 RESULTS OF HAZARDOUS WASTE AUDIT

The results of the Hazardous Waste audit indicated the following:

6.1 **Environmental, Health & Safety Group (EH&S)** . The two person, EH&S Group is responsible for managing the hazardous waste program at WSU. The Manager of this group has a Ph.D. in microbiology and is knowledgeable with chemical properties of materials. He and his assistant have certifications as Certified Hazardous Material Managers (CHMM) and have received training in hazardous waste management. During the time that this audit was being conducted, the group was moving their office from one building to another. As a result, many of their records were packed in boxes and unavailable. Their responsibilities include:

- Managing the hazardous waste management program at WSU;
- Training of department hazardous waste coordinators;

- Furnishing new containers marked as ~~%Hazardous Waste+~~ to the Departments;
- Pick up the hazardous waste from the departments and transport to the Storage Area;
- Prepare manifests;
- Prepare containers for transport with accredited transporter to an TSDF; and
- Prepare biannual reports.

The EH&S Group has no mandate from senior management, no job description and keeps getting transferred from department to department. In addition, their relationship with the various departments on campus is not clearly defined.

The primary responsibilities of the EHS Group should be the overall management of the EHS program, ensure that all personnel are trained and serve as in-house consultants. The group should have a clear mandate from the top management to audit all University departments and research organizations.

Recommendation:

1. There must be a clear directive from senior management that all departments must comply with environmental, health and safety regulations of the University. Authority and Accountability must be clearly defined in each department.

6.2 **McKinley Hall (Chemistry Department)** . The responsible person in charge of the hazardous waste management program at McKinley Hall is the Stockroom Manager. Her responsibilities include:

- Managing the hazardous waste program (satellite storage) in the Chemistry Department;
- Supervising the stockroom;
- Managing chemical, equipment and supplies inventory;
- Preparing stock chemical solutions for the undergraduate laboratories; and
- Training laboratory assistants in the undergraduate laboratories.

Recommendations:

2. The Stockroom Manager has no responsibility for or authority over the graduate laboratories, which represent significant opportunities for improvement. The operations of these laboratories are under the supervision of the professors supervising the research, which do not have and could benefit from laboratory hazardous waste training.
3. The Stockroom Manager also has no responsibilities over research laboratories that become abandoned leaving large quantities of chemicals, some unmarked.
4. Same as #1. There must be a clear directive from senior management that all departments must comply with environmental, health and safety regulations of the University. Authority and Accountability must be clearly defined in each department.

6.3 **National Institute of Aviation Research (NIAR)** . NIAR consists of four separate locations that perform different testing and research protocols. All locations appear to be in compliance with hazardous waste laws and regulations regarding satellite storage areas and status of containers.

Recommendations:

5. NIAR should be assigned responsibility for the environmental, health and safety program for their areas of responsibility. However, NIAR will function as part of the WSU Hazardous Waste Large Quantity Generator ID Number.

- 6.4 **Biological Sciences (Hubbard Hall)** . The Biological Sciences Department generates small amounts of hazardous wastes and appears to handle it properly
- 6.5 **Art Department (McKnight Art Center)** . The Art Department occasionally generates small amounts of hazardous waste.
- 6.6 **Utilities and Auto Repair** . This department generates used oil, used antifreeze, solvent wipes and solvents used to clean brakes.
- 6.7 **Hazardous Waste Storage Area** – The hazardous waste storage area is in compliance with the regulations. The only comment is that containers not being used should be disposed of and the inside of the storage buildings should be organized. Hazardous Waste containers should be clearly labels and visible from at least 20 ft.
- 6.8 **Hazardous Waste Management in Laboratories** - The US EPA adopted 40 CFR 262, Subpart K- Alternative Requirements for Hazardous Waste Determination and Accumulation of Unwanted Material for Laboratories Owned by Eligible Academic Entities, SOURCE: 73 FR 72954, Dec. 1, 2008. Subpart K was adopted specifically for University laboratories after a number of years of researching and addressing the special needs of these institutions. Although the US EPA adopted this regulation in 2008, Kansas (KDHE) still has not incorporated Subpart K into their regulations. The EPA states that subpart is optional. However, a normal interpretation would be that it is optional for Universities not state agencies.

An evaluation of Subpart K with regard to the needs of WSU indicates that it makes sense and should be incorporated into the management of hazardous waste operations of the various laboratories, regardless of whether KDHE agrees or not.

Recommendation:

6. Subpart K should be incorporated into the operations of the WSU Laboratories.
- 6.9 **Training** - Training must be increased with attendance mandatory for all student, faculty and staff that work with chemicals.
- There are a significant number of foreign students attending WSU, including those with advanced degrees, who have no concept of American environmental, health and safety laws and procedures;
 - Some faculty supervising graduate research, also do not have much, if any training and experience with environmental, health and safety procedures;
 - Undergraduate students populate the laboratories of Chemistry and Biology. Some only take one course. The graduate assistants, who supervise these undergraduate must be trained and in turn, train the students.
 - The Utilities Department, especially the auto shop requires periodic training and constant oversight from supervisors.
 - The responsibilities of each Department in WSU must be clearly defined with regarding to environmental, health and safety rules of the University.

ATTACHMENT A

Protocol for Conducting Environmental Compliance Audits for
Hazardous Waste Generators under RCRA
EPA 305-B-01-003, June 2001

Regulatory Requirement or Management Practice	Reviewer Checks
All Facilities HW.1	
HW.1.1 The current status of any ongoing or unresolved Consent Orders, Compliance Agreements, Notices of Violation (NOV), or equivalent state enforcement actions pertaining to RCRA or corresponding state regulations should be examined.	<p>The U.S. EPA issues a CONSENT AGREEMENT AND FINAL ORDER (unsigned and not dated) to Wichita State University and both have agreed to a settlement of this action before the filing of a complaint. The complaint results from a compliance inspection evaluation on June 3-5, 2014. There were eleven categories of violations;</p> <ul style="list-style-type: none"> • Failure to Conduct a Hazardous Waste Determination; • Failure to Meet Generator Requirements; • Failure to Label Satellite Accumulation Containers; • Failure to label Containers of Hazardous Waste; • Failure to Keep Hazardous Waste Containers Closed; • Failure to Comply with Tank System Requirements; • Treatment of Hazardous Waste Without a Permit; • Disposal of Hazardous Waste Without a Permit; • Failure to Comply with the Manifest System; • Failure to Properly Manifest Off-Site Shipments; and • Failure to Comply with Land Disposal Restrictions. <p>The Auditor reviewed this Consent Agreement and photos with the Environmental, Health & Safety Department to understand the background of the complaint.</p>
HW. 1.2 Facilities are required to comply with state and local regulations concerning hazardous waste managements.	<p>The State of Kansas is an authorized state to administer federal RCRA rules and regulations. There appear are no major state regulations that modify federal regulation. There are areas of difference of emphasis and interpretation.</p> <p>A major modification to 40 CFR 262 is Subpart K, which provides standards for managing hazardous waste in academic laboratories at eligible academic entities as an alternative to the satellite accumulation area generator regulations. Although Subpart K provides a number benefits for University Laboratories, such as extended status of unwanted wastes, accumulation times, and disposal of legacy chemicals, the State of Kansas has failed to adopt this regulation.</p>
HW.1.3. Facilities are required to comply with all applicable federal regulatory requirements not identified in this checklist	<p>A walk-through audit of a major number of buildings on the Wichita State Campus indicated the only compliance issues were related to Hazardous Waste. There were no issues related to CAA, CWA, EPCRA or CERCLA. The hazardous waste was created in the numerous laboratories on campus</p>
HW.1.4. Specific persons should be designated responsible for hazardous waste storage areas, and the precise nature of their responsibilities should be specified (MP).	<p>The Hazardous Waste Management Plan has a designated person responsible for the hazardous waste storage area. Fred Plummer, CHMM, a member of the ES&T Group has been designated at the Responsible Person.</p>
HW.10.1. Facilities that generate solid wastes must determine if the wastes are hazardous wastes (40 CFR 262.11, 261.3, 261.4(b), and 261.21 through 261.24) [Revised January 2001	<p>The hazardous waste generating departments and the EHS Group determine hazardous wastes using the following:</p> <ul style="list-style-type: none"> • Knowledge of constituents of the wastes (SDSs) and whether it is listed in 40 CFR 261; • Laboratory analysis; and • Process knowledge.

Regulatory Requirement or Management Practice	Reviewer Checks
<p>HW.10.2. Facilities which claim that a particular material is not a solid waste or is conditionally exempt from regulation as a hazardous waste should be prepared to provide specific documentation in the event of an enforcement action (40 CFR 261.2(f)).</p>	<p>Wichita State University does not have any materials that are not a solid waste and conditionally exempt from regulation.</p>
<p>HW.10.3. Areas where containers of hazardous waste are stored should have secondary containment (MP).</p>	<p>Satellite and Storage areas for Hazardous Waste have secondary containments, an example is the storage area in McKinley Hall, the chemistry building..</p> 
<p>HW.10.4. Generators must not offer their waste to transporters or TSDFs that have not received an EPA identification number (40 62.12(c)).</p>	<p>Tradebe Transportation, LLC, is the transporter for WSU Hazardous Waste. #INR000123497</p> <p>The TSD is Tradebe Treatment and Recycling, LLC, #IND000772186</p>

Regulatory Requirement or Management Practice	Reviewer Checks
<p>SMALL QUANTITY GENERATORS (SQGs)</p> <p>HW.30</p> <p>General</p>	
<p>HW.30.1. SQGs that generate, transport, or handle hazardous wastes must obtain an EPA identification number (40 CFR 262.12(a) and 262.12(b); 40 CFR 265.11)</p>	<p>The National Institute for Aviation Research (NIAR), a research arm of WSU operations a facility called Aircraft Structural Test & Evaluation Center (ASTECC) in the old Kansas Coliseum, Park City, Kansas, just north of Wichita.</p> <ul style="list-style-type: none"> • Aging Aircraft • Ballistic and Impact Dynamics Research Lab • Composites & Advanced Materials • Full-Scale Structural Test <p>ASTECC EPA ID # KSR39275645</p>
<p>HW.30.2. Generators of more than 100 kg (220.46 lb.) but less than 1,000 kg (2,204.62 lb.) of hazardous waste per month may qualify as an SQG which can accumulate hazardous waste on-site for 180 days (or 270 days) without a permit if specific conditions are met (40 CFR 262.34(d)(1), 262.34(d)(4), 262.34(e) and 262.34(f)).</p>	<p>ASTECC is a SQG but currently only generates approximately 100 kg/year. However, as this department of NIAR grows and takes on larger projects from the U.S. government, it is anticipated that it will achieve SQG status.</p>
<p>HW.30.3. An SQG must not offer its hazardous waste to transporters or to TSDFs that have not received an EPA identification number (40 CFR 262.12(c))</p>	<p>Tradebe Transportation, LLC, is the transporter for WSU Hazardous Waste. #INR000123497</p> <p>The TSD is Tradebe Treatment and Recycling, LLC, #IND000772186</p>
<p>HW.30.4. SQGs of hazardous waste are required to use manifests and keep records of hazardous waste activity (40 CFR 262.20, 262.42(b) and 262.44).</p>	<p>Signed copies of returned manifests are kept for three years from the date the waste was accepted by the initial transporter.</p> <p>No exception reports were submitted to the regulatory agency because all signed manifest copies were received in 60 days.</p>
<p>HW.30.5. SQGs are required to keep records of waste analyses, tests, and waste determinations (40 CFR 262.40(c)).</p>	<p>Hazardous Waste records are archived for 3 years.</p>

Regulatory Requirement or Management Practice	Reviewer Checks
<p>SMALL QUANTITY GENERATORS (SQGs)</p> <p>HW.30</p> <p>General</p>	
<p>HW.30.1. SQGs that generate, transport, or handle hazardous wastes must obtain an EPA identification number (40 CFR 262.12(a) and 262.12(b); 40 CFR 265.11</p>	<p>The National Institute for Aviation Research (NIAR), a research arm of WSU operations a facility called Aircraft Structural Test & Evaluation Center (ASTECC) in the old Kansas Coliseum, Park City, Kansas, just north of Wichita.</p> <ul style="list-style-type: none"> • Aging Aircraft • Ballistic and Impact Dynamics Research Lab • Composites & Advanced Materials • Full-Scale Structural Test <p>ASTECC EPA ID # KSR39275645</p>
<p>HW.30.2. Generators of more than 100 kg (220.46 lb.) but less than 1,000 kg (2,204.62 lb.) of hazardous waste per month may qualify as an SQG which can accumulate hazardous waste on-site for 180 days (or 270 days) without a permit if specific conditions are met (40 CFR 262.34(d)(1), 262.34(d)(4), 262.34(e) and 262.34(f)).</p>	<p>ASTECC is a SQG but currently only generates approximately 100 kg/year. However, as this department of NIAR grows and takes on larger projects from the U.S. government, it is anticipated that it will achieve SQG status.</p>
<p>HW.30.3. An SQG must not offer its hazardous waste to transporters or to TSDFs that have not received an EPA identification number (40 CFR 262.12(c)</p>	<p>Tradebe Transportation, LLC, is the transporter for WSU Hazardous Waste. #INR000123497</p> <p>The TSD is Tradebe Treatment and Recycling, LLC, #IND000772186</p>
<p>HW.30.4. SQGs of hazardous waste are required to use manifests and keep records of hazardous waste activity (40 CFR 262.20, 262.42(b) and 262.44).</p>	<p>Signed copies of returned manifests are kept for three years from the date the waste was accepted by the initial transporter.</p> <p>No exception reports were submitted to the regulatory agency because all signed manifest copies were received in 60 days.</p>
<p>HW.30.5. SQGs are required to keep records of waste analyses, tests, and waste determinations (40 CFR 262.40(c)).</p>	<p>ASTECC hazardous waste records are archived for 3 years. The photo shows the cabinet storing all of the records, plans and procedures..</p> 

Regulatory Requirement or Management Practice	Reviewer Checks
SMALL QUANTITY GENERATORS (SQGs) HW.40 Personnel Training	
HW.40.1. SQG personnel are required to be thoroughly familiar with proper waste handling and emergency procedures (40 CFR 262.34(d)(5)(iii))	The person in charge of hazardous waste management is familiar with proper waste handling and emergency procedures. He is a retired military person with AF training and experience.
HW.40.2. Training records should be maintained for all SQG staff who manage hazardous waste (MP).	The person in charge of hazardous waste management is familiar with proper waste handling and emergency procedures. He is a retired military person with AF training and experience.
SMALL QUANTITY GENERATORS (SQGs) HW.50 Containers	
HW.50.1. Empty containers at SQGs previously holding hazardous wastes must meet the regulatory definition of empty before they are exempted from hazardous waste requirements (40 CFR 261.7).	All empty containers used by ASTEC meet the regulatory definition of empty by having less than 2.5 cm of residue remaining or less than 3 percent by weight remaining in the container.
HW.50.2. Containers used to store hazardous waste at SQGs must be in good condition and not leaking (40 CFR 262.34 (d)(2) and 40 CFR 265.171).	All containers used by ASTEC for storing hazardous waste are new containers and not leaking. No used containers are used for storing hazardous waste.
HW.50.3 Containers used at SQGs must be made of or lined with materials compatible with the waste stored in them (40 CFR 262.34(d)(2) and 40 CFR 265.172)	All containers used by ASTEC are compatible with the waste stored; for example caustics and acids are not stored in metal drums.
HW.50.4. Containers of hazardous waste at SQGs must be closed during storage and handled in a safe manner (40 CFR 262.34(d)(2) and 40 CFR 265.173)	All containers inspected were closed except when it was necessary to add or remove waste. The containers were in good condition and not damaged.

Regulatory Requirement or Management Practice	Reviewer Checks	Regulatory Requirement or Management Practice	Reviewer Checks
HW.50.5. The handling of incompatible wastes or incompatible wastes and materials in containers at SQGs must comply with safe management practices (40 CFR 262.34(d)(2) and 40 CFR 265.177).		ASTEC does not have any incompatible solid or liquid wastes, according to Appendix E, Hazardous Waste Storage Incompatibility Chart.	
HW.50.6. Containers of hazardous waste at SQGs should be managed in accordance with specific management practices (MP).		Containers are stored one container high, ASTEC does not generate highly flammable wastes and there is only one small row of containers.	
SMALL QUANTITY GENERATORS HW.60 Satelite Accumulation Points			
HW.60.1. All SQGs may accumulate as much as 55 gal. of hazardous waste or 1 qt. of acutely hazardous waste in containers at or near any point of initial generation without complying with the requirements for on-site storage if specific standards are met (40 CFR 262.34(c)).		ASTEC only generates approximately 100 kg / 100 liters (25 gallons) of hazardous waste and no acutely hazardous waste. The containers are marked H Hazardous Waste+and the containers are new.	

Regulatory Requirement or Management Practice	Reviewer Checks
SMALL QUANTITY GENERATORS HW.70 Container Storage Areas	
HW.70.1. Containers of hazardous waste at SQGs should be kept in storage areas in the management plan MP)	Containers of Hazardous Waste are identified and stored in an appropriate area, according to MP. 
HW.70.2. SQG storage areas must be designed, constructed, maintained, and operated to minimize the possibility of a fire, explosion, or any unplanned release of hazardous waste or constituents which could threaten human health or the environment (40 CFR 262.34(d)(4) and 40 CFR 265.30 through 265.37).	The storage area was located to minimize the occurrence of an explosion, fire or unplanned release of hazardous waste. Areas around the storage area are maintained to allow easy access by plant personnel, fire officials and emergency response personnel.
HW.70.3. SQGs must conduct weekly inspections of container storage areas (40 CFR 262.34(d)(2) and 265.174).	Weekly inspections are conducted for leaking containers.
SMALL QUANTITY GENERATORS HW.80 Disposal of Restricted Waste	
HW.80.1. SQGs must test their wastes or use process knowledge to determine if they are restricted from land disposal (40 CFR 268.7(a)(1)).	ASTECC has process knowledge that the hazardous waste is not a restricted waste.
HW.80.2., HW.80.3, HW.80.4., HW.80.5 When an SQG is managing a restricted waste, a written notice must be issued to the TSDf of the appropriate treatment standards and prohibition levels (40 CFR 268.7(a)(2) through 268.7(a)(4), 268.7(a)(10))	ASTECC is not managing a restricted waste

Regulatory Requirement or Management Practice	Reviewer Checks
LARGE QUANTITY GENERATORS (LQGs) HW.100 General	
HW.100.1. A generator that generates, transports, or handles hazardous wastes must obtain an EPA identification number (40 CFR 262.12(a) and 262.12(b)).	The Campus of WSU, including remote NIAR units, with exception of the Coliseum unit at Park City are combined into one Large Quantity Generator with an EPA ID Number of INR000123497 and Kansas ID Number of KSD053078127.
HW.100.2. Generators may accumulate hazardous waste on-site for 90 days or less without a permit or interim status provided they meet certain conditions (40 CFR 262.34(a)(2), 262.34(a)(3) and 262.34(b)).	N/A
HW.100.3. Generators must not offer their waste to transporters or TSDFs that have not received an EPA identification number (40 CFR 262.12(c)).	The TSDF receiving hazardous waste from WSU is The TSD is Tradebe Treatment and Recycling, LLC, and has an EPA ID #.INR000123497
HW.100.3. Generators must not offer their waste to transporters or TSDFs that have not received an EPA identification number (40 CFR 262.12(c)).	N/A
HW.100.4. Generators who shipped hazardous waste off-site to a TSDF must submit a biennial report to the regulatory agency by 1 March of even numbered years (40 CFR 262.40(b) and 262.41(a))	The WSU ES&T department submits a biennial report to the Kansas, Department of Health and Environment by 1 March of even numbered years. The most current biennial report was signed and submitted March 10, 2016
HW.100.5. Generators are required to use manifests, file manifest exception reports, and maintain records (40 CFR 262.20, 262.40(a), 262.40(b), 262.40(d), and 262.42(a)).	All hazardous wastes shipped from WSU are accompanied with completed and signed EPA Form 8700-22 Uniform Hazardous Waste Manifests.

Regulatory Requirement or Management Practice	Reviewer Checks
<p>HW.100.6. Generators are required to keep records of waste analyses, tests, and waste determinations (40 CFR 262.40(c)).</p>	<p>WSU keeps records of hazardous waste determinations using analytical tests, process statements or knowledge of the chemistry for three years in the ES&T office.</p>
<p>HW.100.7. Generator storage areas must be designed, constructed, maintained, and operated to minimize the possibility of a fire, explosion, or any unplanned release of hazardous waste or constituents which could threaten human health or the environment (40 CFR 262.34(a)(4) and 40 CFR 265.30 through 265.37).</p>	<div style="display: flex; justify-content: space-around;">   </div> <p>WSU storage is constructed of concrete buildings as shown in these photos and designed to minimize / contain fires, explosions or any unplanned release of hazardous wastes. Each concrete building has grating above the floor to hold containers. Any spills in the buildings flow to a sump what pumps the spilled liquid into a holding tank.</p> 
<p>LARGE QUANTITY GENERATORS</p> <p>HW.110</p> <p>Personnel Training</p>	
<p>HW.110.1. All facility personnel who handle hazardous waste must meet certain training requirements (40 CFR 262.34(a)(4); 40 CFR 265.16(a) through 265.16 (c)).</p>	<p>Both Dr. Glendon Miller and Fred Plummer, ES&T, are Certified Hazardous Materials Managers (CHMM) and have received training on managing hazardous wastes, which includes:</p> <ul style="list-style-type: none"> • Designation of listed and characteristic hazardous wastes; • Containers and labeling; • Preparation of manifests; • 90 day storage requirements; and • Maintenance of records.
<p>HW.110.2. Training records must be maintained for all facility staff who manage hazardous waste (40 CFR 262.34(a)(4); 40 CFR 265.16(d) and 265.16(e)).</p>	<p>All departments that generate hazardous waste receive annual training from the EH&S Group. These records are maintained in the EH&S office.</p>

Regulatory Requirement or Management Practice	Reviewer Checks
<p>LARGE QUANTITY GENERATORS</p> <p>HW.120</p> <p>Contingency Plans and Emergency Coordinators</p>	
<p>HW.120.1. Generators must have a contingency plan (40 CFR 262.34(a)(4) and 40 CFR 265.50 through 265.54).</p>	<p>The EH&S department has prepared a contingency plan for spills, fires and explosions. Basically the plan calls for the Wichita Fire Department to respond to fires and explosions. Spill are mitigated to the extent possible and an emergency response company would be called.</p>
<p>HW.120.2. Each generator must have an emergency coordinator on the facility premises or on call at all times (40 CFR 262.34(a)(4) and 40 CFR 265.55).</p>	<p>The EH&S department (2 persons) serve as an emergency coordinators on scene in the event on an explosion, fire or spill.</p> <p>In the event of an explosion, fire or spill in the hazardous waste storage area, the procedure is anyone who notices the incident calls the WSU Campus police department which has a 24/7 operation and the police department calls the emergency coordinator and fire department (if necessary)</p> <p>In the event of a fire in the Chemistry Department, NIAR, Art Department or Biology Department, the Wichita Fire Department would be called</p>
<p>HW.120.3. Emergency coordinators at generators must follow certain emergency procedures whenever there is an imminent or actual emergency situation (40 CFR 262.34(a)(4) and 40 CFR 265.56(a) through 265.56(i)).</p>	<p>The procedure for emergency coordinators are coordinate/manage actions between the Wichita Fire Department or Emergency Response Coordinators and the University.</p>
<p>HW.120.4. Generator operators must record the time, date, and details of any incident that requires implementing the contingency plan (40 CFR 262.34(a)(4) and 40 CFR 265.56(j)).</p>	<p>Emergency Coordinators prepare a written report with the time, date and details of the incident triggering the contingency plan.</p>

Regulatory Requirement or Management Practice	Reviewer Checks
<p>LARGE QUANTITY GENERATORS</p> <p>HW.130</p> <p>Containers</p>	
<p>HW.130.1. Empty containers at generators previously holding hazardous wastes must meet the regulatory definition of empty before they are exempted from hazardous waste requirements (40 CFR 261.7).</p>	<p>Hazardous Waste generated by WSU is not stored in containers previously holding hazardous waste.</p> <p>All containers that store hazardous waste at WSU are new.</p>
<p>HW.130.2. Containers used to store hazardous waste at generators must be in good condition and not leaking (40 CFR 262.34(a)(1)(i) and 265.171).</p>	<p>All containers that store hazardous waste at WSU are new.</p>
<p>HW.130.3. Containers used at generators must be made of or lined with materials compatible with the waste stored in them (40 CFR 262.34(a)(1)(i) and 265.172).</p>	<p>All containers that store hazardous waste are compatible with the waste stored in them.</p> <p>Corrosive (acidic or caustic) wastes are not stored in metal containers.</p>
<p>HW.130.4. Containers must be closed during storage and handled in a safe manner at generators (40 CFR 262.34(a)(1)(i) and 265.173).</p>	<p>All containers holding hazardous waste are closed during storage and handled in a safe manner.</p> <p>Containers (5 gal) at the departments generating hazardous waste are picked up at the generator site and transported to the hazardous waste storage area in small utility trucks over pedestrian paths. These utility trucks do not travel on public roads.</p>
<p>HW.130.5. The handling of incompatible wastes, or incompatible wastes and materials in containers at generators must comply with safe management practices (40 CFR 262.34(a)(1)(i) and 265.177).</p>	<p>No incompatible wastes will be co-mingled in the same container. The local hazardous waste coordinators in the various departments have been trained on the dangers of mixing incompatible wastes.</p> <p>All containers are new and have not previously contained hazardous waste.</p>

Regulatory Requirement or Management Practice	Reviewer Checks
<p>HW.130.6. Containers used to store hazardous waste at generators should be managed in accordance with specific management practices (MP).</p>	<p>All containers of hazardous waste are managed in a safe manner, i.e., no containers are stacked, flammables are grounded and sufficient aisle space is maintained to provide emergency access.</p>
<p>HW.130.7. Containers with design capacities greater than 0.1 m³ [~26 gal.] and less than or equal to 0.46 m³ [~122 gal.] into which hazardous waste is placed are required to meet specific design and operating standards (40 CFR 262.34(a)(1)(i), 265.178, 265.1087(a)</p>	<p>It is unusual for hazardous waste to be stored in other than a 5 gallon (19 Liters) containers, Used oils are sometimes stored in 55 gallon barrels, which meets DOT standards for transportations.</p>
<p>HW.130.8. Containers with design capacities greater than 0.46 m³ [~122 gal.] into which hazardous waste is placed are required to meet specific design and operating standards (40 CFR 262.34(a)(1)(i), 265.178, and 265.1087(a) through 265.1087(b)(1)(ii), 265.1087(b)(1)(iii), 265.1087(c), and 265.1087(d)).</p>	<p>It is unusual for hazardous waste to be stored in other than a 5 gallon (19 Liters) containers, Used oils are sometimes stored in 55 gallon barrels, which meets DOT standards for transportations.</p>
<p>HW.130.9. Containers with design capacities greater than 0.1 m³ [~26 gal.] used for the treatment of a hazardous waste by a waste stabilization process are required to meet specific design and operating standards (40 CFR 262.34(a)(1)(i), 265.178, 265.1087(a) through 265.1087(b)(2), and 265.1087(e)(1) through 265.1087(e)(3)).</p>	<p>It is unusual for hazardous waste to be stored in other than a 5 gallon (19 Liters) containers, Used oils are sometimes stored in 55 gallon barrels, which meets DOT standards for transportations.</p>
<p>HW.130.10. Facilities are required to have a written plan and schedule for inspection and monitoring requirements for containers and meet specific inspection requirements (40 CFR 262.34(a)(1)(i), 265.178, 265.1087(c)(4), 265.1087(d)(4), and 265.1089).</p>	<p>This requirements do not apply to a container with capacity less than or equal to 0.1 m³ (26 gal).</p> <p>It is unusual for hazardous waste to be stored in other than a 5 gallon (19 Liters) containers, Used oils are sometimes stored in 55 gallon barrels, which meets DOT standards for transportations.</p> <p>Weekly inspections are conducted of the Storage Area. The Storage Area meets the total enclosure as required by the regulations. No air emission controls are installed.</p>

Regulatory Requirement or Management Practice	Reviewer Checks
<p>HW.130.12. Facilities are required to meet specific requirements for closed-vent systems and control devices used to achieve compliance (40 CFR 262.34(a)(1)(i), 265.178, and 265.1088). (NOTE: These requirements do not apply to a container that has a design capacity less than or equal to 0.1 m³ [~26 gal.] (40 CFR 265.1080(b)(2))</p>	<p>The Hazardous Waste Storage does not have a close-vent and control devices.</p>
<p>LARGE QUANTITY GENERATORS</p> <p>HW.140</p> <p>Emissions from Process Vents</p>	
<p>HW.140.1, HW.140.2, HW.140.3, HW.140.4, HW.140.5, HW.140.6,</p>	<p>The Hazardous Waste Storage Area does not have any air emissions from any process vents.</p>
<p>LARGE QUANTITY GENERATORS</p> <p>HW.140</p> <p>Air Emissions from Standards for Equipment Leaks</p>	
<p>HW.150.1, HW.150.2, HW.143.3, HW.150.4, HW.150.5, HW.150.6, HW.150.7, HW.150.8, HW.150.9, HW.150.10,</p>	<p>The Hazardous Waste Storage Area does not have any air emissions control equipment, pumps, tanks, instrumentation, valves or any mechanical system.</p>

Regulatory Requirement or Management Practice	Reviewer Checks
<p>LARGE QUANTITY GENERATORS</p> <p>HW.160</p> <p>Satellite Accumulation Points</p>	
<p>HW.160.1. Generators may accumulate as much as 55 gal. of hazardous waste or 1 qt. of acutely hazardous waste in containers at or near any point of initial generation without complying with the requirements for on-site storage if specific standards are met (40 CFR 262.34(c)).</p>	<p>The WSU Campus has five Satellite Accumulation Points, including;</p> <ul style="list-style-type: none"> • McKinley Hall (Chemistry); • Hubbard Hall (Biology); • McKnight Center (Art); • Utilities; and • National Institute of Aviation Research. <p>The satellite points at each of these departments are close to the point of generation and under the control of the operator in that department.</p> <p>New containers are supplied to each department by EH&S Group. The containers are labeled Hazardous Waste, are marked when accumulation of hazardous waste was initiated, and kept closed, except when liquids are being added.</p> <p>Top Photo is Satellite Point in Chemistry. The metal 5 gal cans are empties. All buildings with Satellite Points have NFPA Hazardous Chemicals signs.</p>
<p>HW.170.2. Containers holding ignitable or reactive waste must be located 15 m (50 ft.) from the property line of the facility (40 CFR 262.34(a)(1)(i) and 265.176).</p>	<p>No Hazardous Waste is stored less than 15 m (50 ft) from property lines of the facility.</p>
<p>HW.170.3. Generator personnel must conduct weekly inspections of container storage areas (40 CFR 262.34(a)(1)(i) and 265.174).</p>	<p>All departments conduct weekly inspections of satellite points.</p>



Regulatory Requirement or Management Practice	Reviewer Checks
<p>LARGE QUANTITY GENERATORS</p> <p>HW.160</p> <p>Containment Buildings</p>	
<p>HW.190.1. Generators with containment buildings that are in compliance are not subject to the definition of land disposal if specific requirements are met (40 CFR 262.34(a)(1)(iv) and 265.1100).</p>	<p>The WSU Hazardous Waste Storage Area consisted of concrete building (floor, walls and roof), where hazardous waste is stored and consolidated prior to transportation off-site to the TSDF. The buildings are structurally sound and is sufficiently durable to withstand the movement of personnel, wastes, and handling of equipment within the unit. The buildings are constructed to manage liquids and prevent materials from migrating to the environment. The concrete floor is the primary containment if the containers leak. A sump is located inside to prevent liquids from accumulating on the floor.</p>
<p>HW.190.2. Containment buildings are required to be designed according to specific standards (40 CFR 262.34(a)(1)(iv), 265.1101(a)(1), 265.1101(a)(2), 265.1101(a)(4), and 265.1101(b)).</p>	<p>The buildings are enclosed with a floor, walls, and a roof to prevent exposure to the elements and to assure containment of wastes. The buildings are structurally sound to prevent collapse or other failure. The containment building serves as secondary containment systems for containers within the building</p>
<p>HW.190.3. Containment buildings are required to be operated according to specific standards (40 CFR 262.34(a)(1)(iv), 265.1101(a)(3), 265.1101(c)(1), and 265.1101(c)(4)).</p>	<p>Incompatible waste are not placed in the buildings if they cause the unit or the secondary containment to leak, corrode, or otherwise fail.</p>
<p>HW.190.4. Containment buildings are required to be certified by a registered professional engineer (40 CFR 262.34(a)(1)(iv) and 265.1101(c)(2)).</p>	<p>There are no records that the containment buildings were certified by a Kansas Professional Engineer</p>
<p>HW.190.5. Leaks in containment buildings must be repaired and reported (40 CFR 262.34(a)(1)(iv) and 265.1101(c)(3)).</p>	<p>There are procedures for fixing leaks.</p>
<p>HW.190.6. Containment buildings that contain both areas with and without secondary containment must meet specific requirements (40 CFR 262.34(a)(1)(iv), 264.1101(d), and 265.1101(d)).</p>	<p>There only one area in each building and that is to store Hazardous Waste.</p>

Regulatory Requirement or Management Practice	Reviewer Checks
<p>HW.190.7. When a containment building is closed, specific requirements must be met (40 CFR 262.34(a)(1)(iv), 264.1102, and 265.1102).</p>	<p>In the event the Hazardous Waste Storage Area is closed and will not be used in the future, the regulatory agencies will be contacted to verify closure procedures, which include the transport of all waste material, decontamination of all surfaces in the building and soil sampling around the area.</p>
<p>LARGE QUANTITY GENERATORS</p> <p>HW.160</p> <p>Disposal of Restricted Waste</p>	
<p>HW.200.1. Facilities that generate hazardous wastes must test their wastes or use process knowledge to determine if they are restricted from land disposal (40 CFR 268.7(a)(1)).</p>	<p>The ES&T verify the chemistry of all liquid wastes generated at WSU either with chemical testing at an accredited laboratory, or through process knowledge.</p>
<p>HW.200.2. When a generator is managing a waste or contaminated soil that does not meet treatment standards, a written notice must be issued to the TSDF stating the appropriate treatment standards and prohibition levels (40 CFR 268.7(a)(2), and 268.7(a)(3)) [Revised January 2001].</p>	<p>WSU does not treat a liquid waste or contaminated soil.</p>
<p>HW.200.3. Generators that are managing prohibited wastes in tanks, containers, or containment buildings and treating the waste to meet applicable treatment standards, must develop and follow a written waste analysis plan (40 CFR 268.7(a)(5) and 268.7(a)(10)).</p>	<p>WSU does not treat a liquid waste or contaminated soil.</p>
<p>HW.200.4. Generators are required to keep specific documents pertaining to restricted wastes on-site (40 CFR 268.7(a)(6) through 268.7(a)(8)).</p>	<p>WSU does not treat a liquid waste or contaminated soil.</p>

Regulatory Requirement or Management Practice	Reviewer Checks
<p>HW.200.5. Generators who first claim that hazardous debris is excluded from the definition of hazardous waste are required to meet specific notification and certification requirements (40 CFR 268.7(d)).</p>	<p>WSU does not claim that hazardous debris is excluded from the definition of hazardous waste.</p>
<p>HW.200.6. The storage of hazardous waste that is restricted from land disposal is not allowed unless specific conditions are met (40 CFR 268.50).</p>	<p>WSU does not store hazardous waste that is restricted from land disposal.</p>
<p>TRANSPORTATION OF HAZARDOUS WASTE</p> <p>HW.300</p>	
<p>HW.300.1. Transporters of hazardous waste that is required to be manifested must have an EPA identification number and must comply with manifest management requirements (40 CFR 263.10(a), 263.10(b), 263.11, 263.20(a) through 263.20(d), 263.21 and 263.22(a)).</p>	<p>The TSDF receiving hazardous waste from WSU is The TSD is Tradebe Treatment and Recycling, LLC, and has an EPA ID #.INR000123497</p>
<p>HW.300.2. Before transporting hazardous waste or offering hazardous waste for transportation off-site in the United States, the facility must package and label the waste in accordance with DOT regulations contained in 49 CFR 172, 173, 178, and 179 (40 CFR 262.30 through 262.33).</p>	<p>WSU follows DOT regulations and packages / labels the hazardous waste containers according to DOT regulations.</p>
<p>HW.300.3. Transporters of waste off-site must take immediate notification and clean-up action if a discharge occurs during transport (40 CFR 263.30 and 263.31).</p>	<p>The transporter of hazardous waste from WSU is an independent contractor and must immediately the Kansas State Department of Environment and Health of a spill / discharge during transport and initiate a clean-up action on their own. WSU bears no responsibility to responding to a spill / discharge such as this. WSU has verified tha the Transporter has the proper insurance.</p>

Regulatory Requirement or Management Practice	Reviewer Checks
<p>HW.300.4. The facility should ensure that transportation of hazardous wastes between buildings is accomplished in accordance with good management practices to help prevent spills, releases, and accidents (MP).</p>	<p>Hazardous Waste is transported between building in a small utility vehicle and is accomplished by experience, trained and responsible personnel.</p>
<p>HW.300.5. Transporters must not store manifested shipments in containers meeting DOT packaging requirements for more than 10 days at a transfer facility (40 CFR 263.12).</p>	<p>WSU has no responsibility for ensuring the Transporter does not store manifested shipments in containers for more than 10 days at a transfer facility.</p>
<p>EXPORT/IMPORT OF HAZARDOUS WASTE</p> <p>HW.400</p> <p>Exports of Hazardous Waste for Recovery Within the OECD Member Countries</p>	
<p>HW.400.1, HW.400.2, HW.400.3, HW.400.4, HW.400.5, HW.400.6, HW.400.7</p>	<p>WSU does not export Hazardous Waste to any Countries.</p>
<p>EXPORT/IMPORT OF HAZARDOUS WASTE</p> <p>HW.400</p> <p>Exports of Hazardous Waste (Except for the OECD Member Countries) for Recovery</p>	
<p>HW. 420.1, HW. 420.2, HW. 420.3, HW. 420.4, HW. 420.5, HW. 420.6, HW. 420.7, HW. 420.8,</p>	<p>WSU does not export Hazardous Waste to any Countries.</p>

Regulatory Requirement or Management Practice	Reviewer Checks
<p>IMPORT/IMPORT OF HAZARDOUS WASTE</p> <p>HW.400</p> <p>Imports of Hazardous Waste for Recovery Within the OECD Member Countries.</p>	
<p>HW. 440.1, HW. 440.2, HW. 440.3, HW. 440.4, HW. 440.5, HW. 440.6,</p>	<p>WSU does not import Hazardous Waste from any Country.</p>
<p>IMPORT/IMPORT OF HAZARDOUS WASTE</p> <p>HW.400</p> <p>Imports of Hazardous Waste (Except from the OECD Member Countries) for Recovery Within the OECD Member Countries.</p>	
<p>HW. 460.1, HW. 460.2</p>	<p>WSU does not import Hazardous Waste from any Country.</p>
<p>WASTE MINIMIZATION POLLUTION PREVENTION</p> <p>HW.500</p>	
<p><i>HW.500.1.</i> The generator should have in place a waste minimization program to reduce the volume and toxicity of hazardous wastes generated. The generator is required to sign the Generator's Certification statement on each manifest, attesting to its waste minimization program (MP).</p>	<p>WSU does not have an effective Waste Minimization Program in place.</p>

ATTACHMENT B

Resume

**Phillip L. Hayden, Ph.D., P.E., CIH
True North Thinking, LLC
593 Congress Park Drive
Dayton, OH 45409**

937 438 3010

phayden601@gmail.com

EDUCATION: Ph.D. Environmental Engineering, The Ohio State University, 1971
M.S. Environmental Engineering, University of Cincinnati, 1967
Bachelor of Arts, Chemistry, Wichita State University, 1960

REGISTRATIONS: Diplomate, American Board of Industrial Hygiene (1682)
Diplomate Emeritus, American Academy of Environmental
Engineering, #2887
Professional Engineer, Ohio (40912)
LEED Accredited Professional (U.S. Green Building Council)

TRAINING: OSHA 40-Hour HAZWOPER
OSHA 501 Course
OSHA 10-Hour Construction
Asbestos Project Designer (2001-2006)
Confined Space (Findlay College 98)
Industrial Hygiene Review (University of Cincinnati 98)
Radiation Safety Officer (October 2000)
Certified Safety Professional Review (NSC 2001)
Six-Sigma Black Belt Course, Univ of Dayton (2013)

SUMMARY:

Dr. Hayden is an Environmental, Health & Safety Engineer with over 40 years of experience, identifying, evaluating and solving EHS problems for a wide range of industries including food, beverage, steel, health care, fabrication, chemical process, and construction, He has organized and prepared management and compliance plans for EPA programs, including CAA, CWA, RCRA, CERCLA, EPCRA, and TSCA.

He serviced as Program Manager for the Occupation Health/Safety Program for corporate AK Steel, a major steel production company for over 10 years. He managed the industrial hygiene program which continually assessed worker exposure to toxic metals, VOC, hazardous gases (CO, H₂S, NH₃), hexavalent chromium, PAHs, hydrocarbons), conducted training in chemical safety, PPE, MSDS (SDS), hazard communication, etc.

He has served on government commissions, served as an expert witness, and participated in a wide range of community projects. He founded Hayden Environmental Group in 1972 and directed a Certified (EPA & AIHA) Laboratory and field service groups including occupation health and safety, air pollution sampling, environmental site investigations, and engineering services. He was a founder of Htec Systems, Inc. in 2005, an engineering design/build company that provides sustainable environmental, safety, energy and industrial process systems. Over the past 30 years, he has as a Project Manager for over 30 water and wastewater projects in Asia (8 in China), South and Central America, Eastern Europe, Russia and the Middle East. Most of these projects were design-build which included engineering, procurement of equipment, supervision of construction, commissioning and training.

Specialties: Process Engineering, Water and Wastewater Engineering, Air Pollution control, Hazardous Waste, Sustainable Green Projects, Bioconversion of Waste Materials, Industrial Safety, Industrial Hygiene, Chemical Safety.