Environmental Protection Agency
John R. Kasich, Governor
Mary Taylor, Lt. Governor
Scott J. Nally, Director

September 6, 2011

TUSCARAWAS COUNTY
PROVIA DOOR
DMWM/SEDO
OHD066046749

Mr. Chad Yoder
ProVia Door
425 South Broadway
Sugarcreek, OH 44681

Dear Mr. Yoder:

On August 23, 2011, I inspected ProVia Door's facility in Sugarcreek, Ohio to determine ProVia's compliance with Ohio's hazardous waste laws as found in Chapter 3734. of the Ohio Revised Code (ORC) and Chapter 3745. of the Ohio Administrative Code (OAC). The inspection included a review of company operations and written documentation.

I found the following violations of Ohio's hazardous waste laws. In order to correct these violations, you must do the following and send me the required information ***within 30 days*** of your receipt of this letter:

(1) OAC Rule 3745-66-74, Inspections: The owner or operator must inspect areas where containers are stored, at least weekly, looking for leaks and for deterioration caused by corrosion or other factors. The owner or operator must record inspections in an inspection log or summary.

Prior to waste shipments, ProVia stages the drums of hazardous waste that are ready for off-site shipment in the paint shroud room. The paint shroud room is not included in ProVia's weekly inspections. Because the paint shroud room is being used to store containers of hazardous waste, it must be inspected weekly.

Please submit documentation of how ProVia will comply with the requirement to inspect containers where hazardous waste is stored.

(2) OAC Rule 3745-273-13(D)(1), Waste Management - Standards for Small Quantity Handlers of Universal Waste: A small quantity handler of universal waste must contain any lamp in containers or packages that are structurally sound, adequate to prevent breakage, and compatible with the contents of the lamps. Such containers and packages must remain closed and must lack evidence of leakage, spillage, or damage that could cause leakage under reasonably foreseeable conditions.

Southeast District Office
2195 Front Street
Logan, OH 43138-8637

740 | 385 8501
740 | 385 6490 (fax)
www.epa.ohio.gov

At the time of the inspection, ProVia was storing waste metal halide lamps in an open cardboard box.

ProVia must immediately close the open box. In order to demonstrate your compliance with this rule, submit a photograph of the universal waste lamp storage containers to this office.

(3) ***OAC Rule 3745-273-14(E), Labeling/Marking - Standards for Small Quantity Handlers of Universal Waste:*** Each lamp or a container or package in which such lamps are contained must be labeled or marked clearly with one of the following phrases: "Universal Waste-Lamp(s)," or "Waste Lamp(s)," or "Used Lamp(s)."

At the time of the inspection, ProVia was storing waste fluorescent lamps in a four-foot fiberboard tube and waste metal halide lamps in a cardboard box. Neither of these containers was labeled.

ProVia must immediately label the universal waste lamp containers with one of the three phrases named in the rule. In order to demonstrate that ProVia has returned to compliance with this rule, submit a photograph of the universal waste lamp storage containers to this office.

General Comments

(a) ProVia may be able to reduce the amount of waste they generate. If you find ways to recycle, reduce or eliminate the amount of waste that your company generates you may be able to reduce treatment and disposal costs as well as regulatory requirements. In 2004, ProVia had a pollution prevention assessment completed by Ohio EPA's Office of Pollution Prevention. The assessment report contained numerous suggestions on how to reduce the amount of hazardous waste generated. I suggest that ProVia revisit the suggestions in the report, particularly in the area of increasing paint transfer efficiency and investigating alternative solvents and cleaning systems to reduce or eliminate the xylene used for cleaning. A copy of the 2004 report is enclosed for your consideration. If you have questions about the information in the pollution prevention report or would like additional assistance in this area, please contact Dave Foulkes at (614) 644-3118.

(b) Division of Materials and Waste Management has created an electronic news service to provide you with updates related to hazardous waste activities in Ohio. You can find more information and sign up for this free service at the following Web link: http://ohioepa.custhelp.com/cgi-bin/ohioepa.cfg/php/enduser/doc_serve.php?2=subscriptionpage

Enclosed is a copy of the checklists that we completed as a result of the inspection. You can find Ohio's hazardous waste rules and other information on the division's web page at: http://www.epa.ohio.gov/dhwm/

Should you have any questions, please feel free to call me at (740) 380-5248

Sincerely,

Elizabeth A. Herron

Elizabeth A. Herron
Environmental Specialist
Division of Materials and Waste Management

EAH/mlm

Enclosures

NOTICE:
Ohio EPA's failure to list specific deficiencies or violations in this letter does not relieve your company from having to comply with applicable regulations.

Send to Central Office ☐	Ohio Environmental Protection Agency **RCRA SUBTITLE C SITE IDENTIFICATION/VERIFICATION FORM**	For Ohio EPA use only

Completed verification forms required to be submitted to CO should be e-mailed to brad.hauser@epa.state.oh.us.

Site EPA ID No.	EPA ID Number: **OHD066046749**							
Site Name	Name: **ProVia Door**				Website: (Optional)			
Site Location Information	Street Address: **425 South Broadway Street**							
	City, Town, or Village: **Sugarcreek**				State: OH			
	County Name: **Tuscarawas**				Zip Code: **44681**			
Site Land Type (check only one)	Private ☒	County ☐	District ☐	Federal ☐	Indian ☐	Municipal ☐	State ☐	Other ☐
NAICS code(s) www.census.gov/epcd/www/naics.html								
Facility Representative	First Name: **Chad**		MI:		Last Name: **Yoder**			
Additional names can be recorded in number 12	Title:							
	Phone Number:				Phone Number Extension:			
	E-Mail Address:							
Only provide address information if it is different than the site address	Fax Number:				Fax Number Extension:			
	Street or P.O. Box:							
	City, Town or Village:							
	State:				Zip Code:			
Legal Owner And Operator of the Site. List Additional Owners and/or Operators in the Comment Section or on another copy of this form page	Name of Site's Legal Owner:				Date Became Owner (mm/dd/yyyy):			
	Owner Type:	Private ☐	County ☐	District ☐	Federal ☐	Indian ☐	Municipal ☐	State ☐	Other ☐
	Street or P.O. Box:							
	City, Town or Village:				Owner Phone #:			
	State:				Country:		Zip Code:	
	Name of Site's Operator:				Date Became Operator (mm/dd/yyyy):			
	Operator Type:	Private ☐	County ☐	District ☐	Federal ☐	Indian ☐	Municipal ☐	State ☐	Other ☐
	Street or P.O. Box:							
	City, Town or Village:				Operator Phone #:			
	State:				Country		Zip Code:	

VIOLATIONS CITED? ☒ Yes ☐ No

TYPE OF HANDLER - MARK "X" AS APPROPRIATE

☐ Not a HW Generator	☐ UNKNOWN: Cited for violation of 3745-52-11	☒ Large Quantity Generator (LQG)
	☐ Short-Term/Temporary Generator (generates from a short-term or one-time event and not from on-going processes). *Check the box for the applicable generator status and provide a comment.*	☐ Small Quantity Generator (SQG)
		☐ Conditionally Exempt Small Quantity Generator
		☐ U.S. Importer of Hazardous Waste
		☐ Mixed Waste (Hazardous and Radioactive) Generator

TYPE OF REGULATED WASTE ACTIVITY (MARK "X" IN ALL OF THE APPROPRIATE BOXES)

- ☐ Hazardous Waste Transporter
- ☐ Hazardous Waste Transfer Facility
- ☐ Treater, Storer or Disposer of Hazardous Waste
- ☐ Recycler of Hazardous Waste
- ☐ 72-Hour Recycler
- ☐ Exempt Boiler and/or Industrial Furnace
  - ☐ Small Quantity On-Site Burner Exemption
  - ☐ Smelting, Melting, Refining Furnace Exemption
- ☐ Underground Injection Control Facility
- ☐ Receives Hazardous Waste from Off-site

UNIVERSAL WASTE ACTIVITIES (INDICATE TYPES OF UNIVERSAL WASTE MANAGED (CHECK ALL BOXES THAT APPLY)

- ☒ Small Quantity Handler of Universal Waste
- ☐ Large Quantity Handler of Universal Waste (accumulates 5,000 kg. or more)
- ☐ Destination Facility for Universal Waste

CHECK ALL BOXES BELOW THAT APPLY FOR THE TYPES OF UNIVERSAL WASTE THE FACILITY MANAGES

- ☐ Batteries
- ☐ Pesticides
- ☐ Mercury containing equipment
- ☒ Lamps

USED OIL ACTIVITIES (INDICATE TYPE(S) OF ACTIVITY(S)

- ☒ Used Oil Generator
- ☐ Used Oil Transporter
- ☐ Used Oil Transfer Facility
- ☐ Used Oil Processor
- ☐ Used Oil Re-refiner
- ☐ Off-Specification Used Oil Burner
- ☐ Used Oil Fuel Marketer who directs shipment of Off-Spec Used Oil
- ☐ Used Oil Fuel Marketer who first claims the Used Oil meets the specifications

Eligible Academic Entities with Laboratories: Facility has previously notified that they are opting into managing laboratory hazardous waste pursuant to OAC rules 3745-52-200 through 3745-52-216. Check the box(es) below to indicate the laboratory type.

- ☐ College or University
- ☐ Teaching hospital that is owned by or has a formal written affiliation agreement with a college or university
- ☐ Non-profit Institute that is owned by or has a formal written affiliation agreement with a college or university

Waste Codes for Federally Regulated Hazardous Wastes. Please list the codes for the federally regulated hazardous waste handled at the site. List them in the order they are presented in the regulations (e.g., D001, D003, F007, U112). Use an additional page or list them in the comments if more space is needed. If the waste codes are the same as listed in the most recent RCRAInfo source record, you do not need to list them. Instead just indicate the date of the most recent source record.

D001 **F003**

COMMENTS: USE THIS AREA TO DESCRIBE WHETHER THE INSPECTION WAS ANNOUNCED, WHETHER THE WASTE IS STORED IN TANKS OR CONTAINERS, ETC.

Announced	☐ Yes	☒ No	Additional Facility Representatives: **Cindy Armbrust**
Tanks	☐ Yes	☒ No	
Containers	☒ Yes	☐ No	

Name of Inspector(s) **Elizabeth Herron**

Name of Inspector(s)

Date of Inspection/Time (mm/dd/yyyy) (hh:mm) **08/23/2011 12:45 PM - 3:30 PM**

Comments:

Revised 09.05.10

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NAICS code(s) www.census.gov/epcd/www/naics.html								

Facility Representative Additional names can be recorded in number 12 Only provide address information if it is different than the site address	First Name: **Chad**	MI:	Last Name: **Yoder**
	Title:		
	Phone Number:	Phone Number Extension:	
	E-Mail Address:		
	Fax Number:	Fax Number Extension:	
	Street or P.O. Box:		
	City, Town or Village:		
	State:	Zip Code:	

Legal Owner And Operator of the Site. List Additional Owners and/or Operators in the Comment Section or on another copy of this form page	Name of Site's Legal Owner:				Date Became Owner (mm/dd/yyyy):			
	Owner Type:	Private ☐	County ☐	District ☐	Federal ☐	Indian ☐	Municipal ☐	State ☐	Other ☐
	Street or P.O. Box:							
	City, Town or Village:				Owner Phone #:			
	State:				Country:		Zip Code:	
	Name of Site's Operator:				Date Became Operator (mm/dd/yyyy):			
	Operator Type:	Private ☐	County ☐	District ☐	Federal ☐	Indian ☐	Municipal ☐	State ☐	Other ☐
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D001 **F003**

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Tanks	☐ Yes	☒ No	
Containers	☒ Yes	☐ No	

Name of Inspector(s)	Name of Inspector(s)	Date of Inspection/Time (mm/dd/yyyy) (hh:mm)
Elizabeth Herron		**08/23/2011 12:45 PM - 3:30 PM**

Comments:

Revised 09.05.10

WASTE ACTIVITIES SUMMARY

Facility Name: ProVia Door **Facility Type:** LQG **Date of Inspection:** 08/23/2011 **EPA ID #:** OHD 066 046 749

Description of Waste				*On-Site Management*			*Off-Site Management*
Process Generating Waste	**Waste Generated**	**EPA Waste Code**	**QTY Generated per Month**	**Type of Accumulation/ Storage**	**Type of On-Site Treatment**	**Waste Location**	**Name, state, and type of activity**
Paint cleanup Flushing paint supply lines, mopping floor, cleaning overspray off shroud walls	Waste xylene	D001 F003	174 gallons (1278 lbs.) Monthly average based on 2010 totals	55 gallon drums	none	Paint supply room and paint shroud room	Chemical Solvents Cleveland, OH Fuel blending or solvents recovery
Paint cleanup	Paint waste solids (rags, filters, debris)	D001 F003	1,484 lbs. monthly average based on 2010 totals	55 gallon drums	none	Paint supply room and paint shroud room	Chemical Solvents Cleveland, OH Storage, bulking and transfer
painting	Waste paint	D001 F003	41 gallons monthly average based on 2010 totals	55 gallon drums	none	Paint supply room and paint shroud room	Chemical Solvents Cleveland, OH Storage, bulking and transfer or fuel blending
Equipment maintenance	Used oil	None	Variable but less than 55-gallons per year	55-gallon drum	none	Maintenance area	Self-transport to ProVia truck maintenance garage for burning in used oil furnace
Lighting	Waste lamps	Uni-versal	varies	Fiber board tubes and cardboard boxes	none	Near maintenance area	Chemical Solvents Cleveland, OH Recycled

PROCESS DESCRIPTION

ProVia Door manufactures aluminum and vinyl doors and windows. Hazardous waste is generated by the preparation and painting of the aluminum components as detailed in the following description. The manufacturing of the vinyl products (which are not painted) does not generate any hazardous waste. The facility employs about 125 people and runs one shift.

Aluminum stock is received into the facility with a mill finish. The aluminum stock goes through a 5-stage wash process to prepare the surface for coating with a polyester acrylic paint. The wash process is accomplished by use of an overhead conveyor system that moves the aluminum parts through an enclosed spray system. The 5-stage wash process consists of 1) an acid wash using a product called "Bulk Kleen 74H9" which is supplied by Bulk Chemical Corp.; 2) fresh water rinse; 3) fresh water rinse; 4) reverse osmosis water; 5) application of a conversion coating called "E-clps" which is supplied by Bulk Chemical Corp. The facility uses city water in the wash process and makes their own reverse osmosis water using city water. The stage 1 tank is emptied once per month, diluted and piped to the Village of Sugarcreek POTW under an indirect discharge permit from Ohio EPA. The stage 5 tank is emptied once per week, diluted and piped to the Village of Sugarcreek POTW under an indirect discharge permit from Ohio EPA.

After the 5-stage wash process, the aluminum stock, still moving by conveyor, goes to a drying oven and then passes through two opposing silo-type paint shrouds. The paint is applied using an electrostatic system with an automated turbo disk rotary paint applicator on a vertical reciprocator. ProVia offers customers a choice of 16 colors. In between color changes, the paint lines are flushed with xylene. The amount of line flushing has been minimized with the use of 13 individual paint pumps which feed to the turbo disk. The pump system was intended to allow a dedicated pump for each color, however, since the system was installed, three additional colors have been added to the product line. Space constraints have kept ProVia from installing additional pumps so similar colors and less popular colors share pumps. Painted parts are cured in 400°F oven.

WASTE MANAGEMENT INFORMATION

ProVia satellite accumulates paint overspray in the shrouds using 5-gallon pails. The overspray paint runs down the inside walls of the shroud and into a metal lip on the shroud wall that acts as a gutter. The gutters gravity drains into five 5-gallon pails in each shroud. When full, the 5-gallon pails are poured into a 55-gallon drum located in the paint storage room. The paint storage room serves as ProVia's storage area for paint product and as <90 day storage.

In addition to the waste paint from the shrouds, the <90 day area also stores waste xylene and paint solids. The waste xylene is generated from purging the paint lines and from cleaning the floor and shroud walls. The floor is cleaned weekly by mopping it with xylene. The xylene mop water is saved in covered containers and re-used several times. When the xylene from floor mopping is spent, it is added to the 55-gallon drum that accumulates xylene from paint line flushes.

ProVia generated waste paint solids, which include rags used in clean up, paint filters from the shrouds (which are changed quarterly), mop heads used with xylene and any other solid material (such as cardboard) that gets paint on it. The solids are collected in a 55-gallon drum for disposal as hazardous waste.

The facility has one parts washer located in the maintenance area. This part washer is rarely used. It was reported that ProVia occasionally adds more solvent to the washer. It has been many years since they have removed any for disposal. When last disposed it was managed as a hazardous waste by Chemical Solvents.

REGULATORY HISTORY

Last Inspection
The facility was last inspected April 9, 2009.

Waste Exclusion History
ProVia has a waste exclusion that is no longer used. January 28, 1983 U.S. EPA granted the facility a temporary exclusion for F019 wastewater treatment sludge from the chemical conversion coating of aluminum. The exclusion was published in the Federal Register Volume 51 Number 88 on May 7, 1986. August 15, 1986 U.S. EPA granted the ProVia facility a final exclusion. The exclusion was given on the grounds that the facility did not use cyanide in their process. The presence of cyanide in wastewater treatment sludge from the chemical conversion coating of aluminum was the basis for assigning the F019 listing to wastewater treatment sludge from that process.

In August 1996 the facility changed their process so that chromic acid was no longer used. Without the chromium in the process the facility was no longer required by Ohio EPA to pretreat their wastewater before discharging it to the Village of Sugarcreek. When the facility stopped pretreating their wastewater they stopped generating wastewater treatment sludge, therefore they no longer use their exclusion.

LARGE QUANTITY GENERATOR REQUIREMENTS
COMPLETE AND ATTACH A PROCESS DESCRIPTION SUMMARY

CESQG: ≤100 Kg. (Approximately 25-30 gallons) of waste in a calendar month or < 1 Kg. of acutely hazardous waste.
SQG: Between 100 and 1,000 Kg. (About 25 to under 300 gallons) of waste in a calendar month.
LQG: ≥ 1,000 Kg. (~300 gallons) of waste in a calendar month or ≥1 Kg. of acutely hazardous waste in a calendar month.
NOTE: To convert from gallons to pounds: Amount in gallons x Specific Gravity x 8.345 = Amounts in pounds.

GENERAL REQUIREMENTS

1.		Have all wastes generated at the facility been adequately evaluated? [3745-52-11]	Yes ☒ No ☐ N/A ☐
2.		Are records of waste determination being kept for at least 3 years? [3745-52-40(C)]	Yes ☒ No ☐ N/A ☐
3.		Has the generator obtained a U.S. EPA identification number? [3745-52-12]	Yes ☒ No ☐ N/A ☐
4.		Were annual reports filed with Ohio EPA on or before March 1st? [3745-52-41(A)]	Yes ☒ No ☐ N/A ☐
5.		Are annual reports kept on file for at least 3 years? [3745-52-40(B)]	Yes ☒ No ☐ N/A ☐
6.		Has the generator transported or caused to be transported hazardous waste to **other** than a facility authorized to manage the hazardous waste? [ORC 3734.02(F)]	Yes ☐ No ☒ N/A ☐
7.		Has the generator disposed of hazardous waste **on-site without a permit** or at another facility **other** than a facility authorized to dispose of the hazardous waste? [ORC 3734.02(E)&(F)]	Yes ☐ No ☒ N/A ☐
8.		Does the generator accumulate hazardous waste?	Yes ☒ No ☐ N/A ☐
NOTE: If the LQG does not accumulate or treat hazardous waste, it is not subject to 52-34 standards. All other requirements still apply, e.g., annual reports, manifest, marking, record keeping, LDR, etc.			
9.		Has the generator accumulated hazardous waste on-site in excess of 90 days without a permit or an extension from the director ORC §3734.02(E)&(F)?	Yes ☐ No ☒ N/A ☐
NOTE: If F006 waste is generated and accumulated for > 90 days and is recycled see 3745-52-34(G)&(H).			
10.		Does the generator treat hazardous waste in a: [ORC 3734.02(E)&(F)]	
	a.	Container that meets 3745-66-70 to 3745-66-77?	Yes ☐ No ☐ N/A ☒
	b.	Tank that meets 3745-66-90 to 3745-66-100 except 3745-66-97(C)?	Yes ☐ No ☐ N/A ☒
	c.	Drip pads that meet 3745-69-40 to 3745-69-45?	Yes ☐ No ☐ N/A ☒
	d.	Containment building that meets 3745-256-100 to 3745-256-102?	Yes ☐ No ☐ N/A ☒
NOTE: Complete appropriate checklist for each unit.			
NOTE: If waste is treated to meet LDRs, use LDR checklist.			
11.		Does the generator export hazardous waste? If so:	Yes ☐ No ☒ N/A ☐
	a.	Has the generator notified U.S. EPA of export activity? [3745-52-53(A)]	Yes ☐ No ☐ N/A ☒
	b.	Has the generator complied with special manifest requirements? [3745-52-54]	Yes ☐ No ☐ N/A ☒
	c.	For manifests that have not been returned to the generator: has an exception report been filed? [3745-52-55]	Yes ☐ No ☐ N/A ☒
	d.	Has an annual report been submitted to U.S. EPA? [3745-52-56]	Yes ☐ No ☐ N/A ☒
	e.	Are export related documents being maintained on-site? [3745-52-57(A)]	Yes ☐ No ☐ N/A ☒

MANIFEST REQUIREMENTS		
12.	Have all hazardous wastes shipped off-site been accompanied by a manifest? (U.S. EPA Form 8700-22) [3745-52-20(A)(1)]	Yes ☒ No ☐ N/A ☐
13.	Have items (1) through (20) of each manifest been completed? [3745-52-20(A)(1)]&[3745-52-27(A)]	Yes ☒ No ☐ N/A ☐
NOTE: U.S. EPA Form 8700-22(A) (the continuation form) may be needed in addition to Form 8700-22. In these situations items (21) through (35) must also be completed. [3745-52-20(A)(1)]		
14.	Does each manifest designate at least one facility which is permitted to handle the waste? [3745-52-20(B)]	Yes ☒ No ☐ N/A ☐
NOTE: The generator may designate on the manifest one alternate facility to handle the waste in the event of an emergency which prevents the delivery of waste to the primary designated facility. [3745-52-20(C)]		
15.	If the transporter was unable to deliver a shipment of hazardous waste to the designated facility, did the generator designate an alternate TSD facility or give the transporter instructions to return the waste? [3745-52-20(D)]	Yes ☐ No ☐ N/A ☒
16.	Have the manifests been signed by the generator and initial transporter? [3745-52-23(A)(1)&(2)]	Yes ☒ No ☐ N/A ☐
NOTE: Remind the generator that the certification statement they signed indicates: 1) they have properly prepared the shipment for transportation and 2) they have a program in place to reduce the volume and toxicity waste they generate.		
17.	If the generator received a rejected load or residue and accumulated the waste on-site, did the generator sign item 18c or 20 of the manifest? [3745-52-34(M)]	Yes ☐ No ☐ N/A ☒
18.	If the generator did not receive a return copy of each completed manifest within 35 days of the waste being accepted by the transporter, did the generator contact the transporter and/or TSD facility to check on the status of the waste? [3745-52-42(A)(1)]	Yes ☐ No ☐ N/A ☒
19.	If the generator has not received the manifest within 45 days, did the generator file an exception report with Ohio EPA? [3745-52-42(A)(2)]	Yes ☐ No ☐ N/A ☒
20.	Are signed copies of all manifests and any exception reports being retained for at least three years? [3745-52-40]	Yes ☒ No ☐ N/A ☐
NOTE: Waste generated at one location and transported along a publicly accessible road for temporary consolidated storage or treatment on a contiguous property also owned by the same person is not considered "on-site" and manifesting and transporter requirements must be met. To transport "along" a public right-of-way the destination facility has to act as a transfer facility or have a permit because this is considered to be "off-site." For additional information see the definition of "on-site" in OAC rule 3745-50-10.		
PERSONNEL TRAINING		
21.	Does the generator have a training program which teaches facility personnel hazardous waste management procedures (including contingency plan implementation) relevant to their positions? [3745-65-16(A)(2)]	Yes ☒ No ☐ N/A ☐
22.	Does the personnel training program, at a minimum, include instructions to ensure that facility personnel are able to respond effectively to emergencies involving hazardous waste by familiarizing them with emergency procedures, emergency equipment and emergency systems (where applicable)? [3745-65-16(A)(3)]	Yes ☒ No ☐ N/A ☐
NOTE: For facility employees that receive emergency response training pursuant to OSHA regulations, the facility is not required to provide separate emergency response training, provided that the overall facility training meets all the requirements of OAC 3745-65-16(A). [3745-65-16(A)(4)]		
23.	Is the personnel training program directed by a person trained in hazardous waste management procedures? [3745-65-16(A)(2)]	Yes ☒ No ☐ N/A ☐
24.	Do new employees receive training within six months after the date of hire (or assignment to a new position)? [3745-65-16(B)]	Yes ☒ No ☐ N/A ☐
25.	Does the generator provide annual refresher training to employees? [3745-65-16(C)]	Yes ☒ No ☐ N/A ☐
26.	Does the generator keep records and documentation of:	
a.	Job titles? [3745-65-16(D)(1)]	Yes ☒ No ☐ N/A ☐

	b.	Job descriptions? [3745-65-16(D)(2)]	Yes ☒ No ☐ N/A ☐
	c.	Type and amount of training given to each person? [3745-65-16(D)(3)]	Yes ☒ No ☐ N/A ☐
	d.	Completed training or job experience required? [3745-65-16(D)(4)]	Yes ☒ No ☐ N/A ☐
27.	Are training records for current personnel kept until closure of the facility and are training records for former employees kept for at least three years from the date the employee last worked at the facility? [3745-65-16(E)]		Yes ☒ No ☐ N/A ☐

NOTE: The following section can be used by the inspector to document that all personnel who are involved with hazardous waste management have been trained. The employees who need training (written and/or on-the -job) may include the following: environmental coordinators, drum handlers, emergency coordinators, personnel who conduct hazardous waste inspections, emergency response teams, personnel who prepare manifest, etc.

Job Performed	Name of Employee	Date Trained

CONTINGENCY PLAN

28.	Does the owner/operator have a contingency plan to minimize hazards to human health or the environment from fires, explosions or any unplanned release of hazardous waste? [3745-65-51(A)]		Yes ☒ No ☐ N/A ☐
29.	Does the plan describe the following:		
	a.	Actions to be taken in response to fires, explosions or any unplanned release of hazardous waste? [3745-65-52(A)]	Yes ☒ No ☐ N/A ☐
	b.	Arrangements with emergency authorities? [3745-65-52(C)]	Yes ☒ No ☐ N/A ☐
	c.	A current list of names, addresses and telephone numbers (office and home) of all persons qualified to act as emergency coordinator? [3745-65-52(D)]	Yes ☒ No ☐ N/A ☐
	d.	A list of all emergency equipment, including: location, a physical description and brief outline of capabilities? [3745-65-52(E)]	Yes ☒ No ☐ N/A ☐
	e.	An evacuation plan for facility personnel where there is possibility that evacuation may be necessary? [3745-65-52(F)]	Yes ☒ No ☐ N/A ☐

NOTE: If the facility already has a "Spill Prevention, Control and Countermeasures Plan" under 40 CFR Part 112 or 40 CFR Part 1510, or some other emergency plan, the facility can amend that plan to incorporate hazardous waste management provisions that are sufficient to comply with OAC requirements. The facility may develop one contingency plan which meets all regulatory requirements. Ohio EPA recommends that the plan be based on the "National Response Team's Integrated Contingency Plan Guidance (One Plan)." [3745-65-52(B)]

30.	Is a copy of the plan (plus revisions) kept on-site and been given to all emergency authorities that may be requested to provide emergency services? [3745-65-53(A)&(B)]	Yes ☒ No ☐ N/A ☐
31.	Has the generator revised the plan in response to rule changes, facility, equipment and personnel changes, or failure of the plan? [3745-65-54]	Yes ☐ No ☐ N/A ☒
32.	Is an emergency coordinator available at all times (on-site or on-call)? [3745-65-55]	Yes ☒ No ☐ N/A ☐

NOTE: The emergency coordinator shall be thoroughly familiar with: (a) all aspects of the facility's contingency plan; (b) all operations and activities at the facility; (c) the location and characteristics of waste handled; (d) the location of all records within the facility; (e) facility layout; and (f) shall have the authority to commit the resources needed to implement provisions of the contingency plan.

EMERGENCY PROCEDURES

33.	Has there been a fire, explosion or release of hazardous waste or hazardous waste constituents since the last inspection? If so:		Yes ☐ No ☒ N/A ☐
	a.	Was the contingency plan implemented? [3745-65-51(B)]	Yes ☐ No ☐ N/A ☒

	b.	Did the facility follow the emergency procedures in 3745-65-56(A) through (H)?	Yes ☐ No ☐ N/A ☒
	c.	Did the facility submit a report to the Director within 15 days of the incident as required by 3745-65-56(I)?	Yes ☐ No ☐ N/A ☒
NOTE: OAC 3745-65-51(B) requires that the contingency plan be implemented immediately whenever there is a fire, explosion, or release of hazardous waste or hazardous waste constituents, which could threaten human health and the environment.			
PREPAREDNESS AND PREVENTION			
34.	Is the facility operated to minimize the possibility of fire, explosion, or any unplanned release of hazardous waste? [3745-65-31]		Yes ☒ No ☐ N/A ☐
35.	Does the generator have the following equipment at the facility, if it is required due to actual hazards associated with the waste:		
	a.	Internal communications or alarm system? [3745-65-32(A)]	Yes ☒ No ☐ N/A ☐
	b.	Emergency communication device? [3745-65-32(B)]	Yes ☒ No ☐ N/A ☐
	c.	Portable fire control, spill control and decon equipment? [3745-65-32(C)]	Yes ☒ No ☐ N/A ☐
	d.	Water of adequate volume/pressure per documentation or facility rep? [3745-65-32(D)]	Yes ☒ No ☐ N/A ☐
NOTE: Verify that the equipment is listed in the contingency plan.			
36.	Is emergency equipment tested (inspected) as necessary to ensure its proper operation in time of emergency? [3745-65-33]		Yes ☒ No ☐ N/A ☐
37.	Are emergency equipment tests (inspections) recorded in a log or summary? [3745-65-33]		Yes ☒ No ☐ N/A ☐
38.	Do personnel have immediate access to an internal alarm or emergency communication device when handling hazardous waste (unless the device is not required under 3745-65-32)? [3745-65-34(A)]		Yes ☒ No ☐ N/A ☐
39.	If there is only one employee on the premises, is there immediate access to a device (eg., phone, hand held two-way radio) capable of summoning external emergency assistance (unless not required under 3745-65-32)? [3745-65-34(B)]		Yes ☒ No ☐ N/A ☐
40.	Is adequate aisle space provided for unobstructed movement of emergency or spill control equipment? [3745-65-35]		Yes ☒ No ☐ N/A ☐
41.	Has the generator attempted to familiarize emergency authorities with possible hazards and facility layouts? [3745-65-37(A)]		Yes ☒ No ☐ N/A ☐
42.	Where authorities have declined to enter into arrangements or agreements, has the generator documented such a refusal? [3745-65-37(B)]		Yes ☐ No ☐ N/A ☒
SATELLITE ACCUMULATION AREA REQUIREMENTS			
43.	Does the generator ensure that satellite accumulation area(s):		
	a.	Are at or near a point of generation? [3745-52-34(C)(1)]	Yes ☒ No ☐ N/A ☐
	b.	Are under the control of the operator of the process generating the waste? [3745-52-34(C)(1)]	Yes ☒ No ☐ N/A ☐
	c.	Do not exceed a total of 55 gallons of hazardous waste per waste stream? [3745-52-34(C)(1)]	Yes ☒ No ☐ N/A ☐
	d.	Do not exceed one quart of acutely hazardous waste at any one time? [3745-52-34(C)(1)]	Yes ☒ No ☐ N/A ☐
	e.	Containers are closed, in good condition and compatible with wastes stored in them? [3745-52-34(C)(1)(a)]	Yes ☒ No ☐ N/A ☐
	f.	Containers are marked with words "Hazardous Waste" or other words identifying the contents? [3745-52-34(C)(1)(b)]	Yes ☒ No ☐ N/A ☐
44.	Is the generator accumulating hazardous waste(s) in excess of the amounts		Yes ☐ No ☒ N/A ☐

	listed in the preceding question? If so:		
	a.	Did the generator comply with 3745-52-34(A)(1) through (4) or other applicable generator requirements within three days? [3745-52-34(C)(2)]	Yes ☐ No ☐ N/A ☒
	b.	Did the generator mark the container(s) holding excess with the accumulation date when the 55 gallon (one quart) limit was exceeded? [3745-52-34(C)(2)]	Yes ☐ No ☐ N/A ☒
NOTE: The satellite accumulation area is limited to 55 gallons of hazardous waste accumulated from a distinct point of generation in the process under the control of the operator of the process generating the waste (less then 1 quart for acute hazardous waste). There could be individual waste streams accumulated in an area from different points of generation.			
USE AND MANAGEMENT OF CONTAINERS IN <90 DAY ACCUMULATION AREAS			
45.	Has the generator marked containers with the words "Hazardous Waste?" [3745-52-34(A)(3)]		Yes ☒ No ☐ N/A ☐
46.	Is the accumulation date on each container? [3745-52-34(A)(2)]		Yes ☒ No ☐ N/A ☐
47.	Are hazardous wastes stored in containers which are:		
	a.	Closed (except when adding/removing wastes)? [3745-66-73(A)]	Yes ☒ No ☐ N/A ☐
	b.	In good condition? [3745-66-71]	Yes ☒ No ☐ N/A ☐
	c.	Compatible with wastes stored in them? [3745-66-72]	Yes ☒ No ☐ N/A ☐
	d.	Handled in a manner which prevents rupture/leakage? [3745-66-73(B)]	Yes ☒ No ☐ N/A ☐
NOTE: Record location on process summary sheets, photograph the area, and record on facility map.			
48.	Is the container accumulation areas(s) inspected weekly? [3745-66-74]		Yes ☐ No ☒ N/A ☐
	a.	Are inspections recorded in a log or summary? [3745-66-74]	Yes ☐ No ☒ N/A ☐
	ProVia's main container accumulation area is the paint room. This area is inspected weekly and the inspections are recorded in a log. Prior to waste shipments, which occur the third Monday of every month, ProVia stages the drums of hazardous waste that are ready for off-site shipment in the paint shroud room. The paint shroud room is not included in ProVia's weekly inspections.		
NOTE: "Week" means 7 consecutive days per ORC§1.44(A).			
49.	Are containers of ignitable or reactive wastes located at least 50 feet (15 meters) from the facility's property line? [3745-66-76]		Yes ☒ No ☐ N/A ☐
50.	Are containers of incompatible wastes stored separately from each other by means of a dike, berm, wall or other device? [3745-66-77(C)]		Yes ☐ No ☐ N/A ☒
51.	If the generator places incompatible wastes, or incompatible wastes and materials in the same container, is it done in accordance with 3745-65-17(B)? [3745-66-77(A)]		Yes ☐ No ☐ N/A ☒
52.	If the generator places hazardous waste in an unwashed container that previously held an incompatible waste, is it done in accordance with 3745-65-17(B)? [3745-66-77(B)]		Yes ☐ No ☐ N/A ☒
NOTE: OAC 3745-65-17(B) requires that the generator treat, store, or dispose of ignitable or reactive waste, and the mixture or commingling of incompatible wastes, or incompatible wastes and materials so that it does not create undesirable conditions or threaten human health or the environment.			
53.	If the generator has closed a <90 day accumulation area does the closure appear to have met the closure performance standard of 3745-66-11? [3745-52-34(A)(1)]		Yes ☐ No ☐ N/A ☒
NOTE: Please provide a description of the unit and documentation provided by the generator for the file to demonstrate that closure was completed in accordance with the closure performance standards. If the generator has closed a <90 day			

tank, closure must also be completed in accordance with OAC 3745-66-97 (except for paragraph C of this rule). [3745-52-34]		
PRE-TRANSPORT REQUIREMENTS		
54.	Does the generator package/label its hazardous waste in accordance with the applicable DOT regulations? [3745-52-30, 3745-52-31 and 3745-52-32(A)]	Yes ☒ No ☐ N/A ☐
55.	Does each container ≤119 gallons have a completed hazardous waste label? [3745-52-32(B)]	Yes ☒ No ☐ N/A ☐
56.	Before off-site transportation, does the generator placard or offer the appropriate DOT placards to the initial transporter? [3745-52-33]	Yes ☒ No ☐ N/A ☐
NOTE: Continue with the generator LDR requirements on the next page.		

GENERATOR LDR REQUIREMENTS				
NOTE: This LDR checklist does not include the requirements for generators that treat to meet LDR standards. If the generator treats, the inspector should use the stand-alone Generator LDR checklist instead of this checklist.				
GENERAL REQUIREMENTS				
1.	If LDRs do not apply, does the generator have a statement that lists how the HW was generated, why LDRs don't apply and where the HW went? [3745-270-07(A)(7)]			Yes ☐ No ☐ N/A ☒
2.	Did the generator determine if the HW/soil must be treated to meet the LDR treatment standard prior to disposal? Generator knowledge or testing may be used. [3745-270-07(A)(1)] If not,			Yes ☒ No ☐ N/A ☐
	a.	Did the generator send the waste to a permitted HW TREATMENT facility? [3745-270-07(A)(1)]		Yes ☒ No ☐ N/A ☐
NOTE: This is done by determining if the HW /soil contains levels of constituents greater than the levels given in its LDR treatment standard in 3745-270-40. However, if a specific treatment method is given in 3745-270-40 for the HW, no determination is required [3745-270-07(A)(1)(b)]. If soil, generator can choose to have soil treated to LDR levels given in 3745-270-49 (alternative treatment levels for soils).				
3.	Does the generator have documentation of how he determined whether the HW/soil meets or does not meet the LDR treatment standard in 2, above? [3745-270-07(A)(6)(a) or 3745-270-07(A)(6)(b)]			Yes ☒ No ☐ N/A ☐
4.	Does the generator keep the documentation required in #2, above, on-site for at least three years from the last date the HW/soil was sent on-site/off-site for treatment/disposal? [3745-270-07(A)(8)]			Yes ☒ No ☐ N/A ☐
5.	Does the generator generate a listed HW that exhibits a characteristic? If yes,			Yes ☒ No ☐ N/A ☐
	a.	Did the generator determine if the listed HW exhibits a characteristic that is not treated under the LDR treatment standard for the listed HW? [3745-270-09(A)]		Yes ☒ No ☐ N/A ☐
FOR EXAMPLE: F006 that exhibits the characteristic for silver or K062 that is corrosive, D002. Review LDR treatment standard in 3745-270-40 to determine what constituents the listed HW is treated for.				
6.	Did the generator determine if its characteristic HW contains underlying hazardous constituents that need to be treated? [3745-270-09(A)]			Yes ☐ No ☐ N/A ☒
	Waste is > 10 % TOC.			
NOTE: This is done by evaluating which underlying hazardous constituents (UHC) are in the HW at levels above the universal treatment standards given in 3745-270-48. This requirement does not apply to high total organic carbon (i.e., contains >10% TOC) D001 wastes or listed HWs.				
NOTE: Written documentation of this determination is not required.				
7.	Did the generator treat his HW /soil on-site <u>to meet</u> the LDR treatment standard?			Yes ☐ No ☒ N/A ☐
NOTE: If "Yes" see question #16.				
8.	Did the generator send a one-time LDR notification form to the TSD with the first shipment to that facility? [3745-270-07(A)(2)]			Yes ☒ No ☐ N/A ☐
	a.	If the generator chose not to make the determination of whether his waste must be treated, did he send a notice to the TSD facility with each shipment? [3745-270-07(A)(2)] If so, did the notice include:		Yes ☐ No ☐ N/A ☒
		i	Applicable HW codes?	Yes ☐ No ☐ N/A ☒
		ii	Manifest number of the first shipment to the TSD?	Yes ☐ No ☐ N/A ☒
		iii	A statement that conveys that the HW may or may not be subject to the LDR treatment standards and the TSD must make that determination."?	Yes ☐ No ☐ N/A ☒
9.	Did the generator resubmit the LDR notification form to the TSD when the HW changed or the generator used a new TSD? [3745-270-07(A)(2)]			Yes ☐ No ☐ N/A ☒

10.	Does the generator have a copy of the LDR notification form/notice on file? [3745-270-07(A)(2)]			Yes ☒ No ☐ N/A ☐
	a.	Is the form/notice kept on file for three years after last HW shipped? [3745-270-07(A)(8)]		Yes ☒ No ☐ N/A ☐
NOTIFICATION FORM				
11.	Does the LDR Notification form contain the following information:			
	a.	Manifest number of the first waste shipment to the TSD? [3745-270-07(A)(2)]		Yes ☒ No ☐ N/A ☐
	b.	Applicable waste codes (includes characteristic codes for a listed HW if applicable)? [3745-270-07(A)(2)]		Yes ☒ No ☐ N/A ☐
	c.	A statement that conveys that the HW is subject to LDRs and must be treated to meet LDR treatment requirements? [3745-270-07(A)(2)]		Yes ☒ No ☐ N/A ☐
	d.	A designation whether the HW is a wastewater or non-wastewater? [3745-270-07(A)(2)]		Yes ☒ No ☐ N/A ☐
NOTE: A wastewater contains <1% by wt. total suspended solids (TSS) and <1% by wt. TOC. If you doubt the HW is a wastewater or non-wastewater, the HW can be tested using for example, Standard Methods (SM) 160.2 for TSS, SW-846 method 9060a for TOC.				
	e.	Designation of the waste subcategory when applicable? [3745-270-07(A)(2)]		Yes ☒ No ☐ N/A ☐
NOTE: Subcategories are found on the LDR treatment standards table under the applicable waste code. Not all HWs have subcategories				
	f.	A listing of the underlying hazardous constituents for which a characteristic waste must be treated? [3745-270-07(A)(2)]		Yes ☐ No ☐ N/A ☒
NOTE: Not required if the waste is high TOC D001 or the TSD tests its treatment residues for all underlying hazardous constituents.				
	g.	If the HW is F001-F005 or F039, did the generator note on the LDR form what solvents or constituents, respectively, the waste contains and must be treated for? [3745-270-07(A)(2)]		Yes ☒ No ☐ N/A ☐
NOTE: Not required if the TSD tests its treatment residues for all underlying hazardous constituents.				
PROHIBITED DILUTION				
12.	Is the HW treated by burning? If "No" go to #15.			Yes ☒ No ☐ N/A ☐
13.	Is the HW a metal-bearing HW?			Yes ☐ No ☒ N/A ☐
NOTE: Generally, metal-bearing HWs contain heavy metals above TCLP levels or were listed due to the presence of metals. A list of the restricted metal-bearing HWs is given in the Appendix to 3745-270-03.				
14.	a.	Metal-bearing HWs cannot be incinerated, combusted or, blended and burned for fuel unless **one** of the following conditions apply. [3745-270-03(c)]		
		i.	Contains > 1% TOC?	Yes ☐ No ☐ N/A ☒
		ii.	Contains organic constituents or cyanide at levels greater than the UTS levels?	Yes ☐ No ☐ N/A ☒
		iii.	Is made up of combustible material e.g., paper, wood, plastic?	Yes ☐ No ☐ N/A ☒
		iv.	Has a reasonable heating value (e.g., > 5000 Btu)?	Yes ☐ No ☐ N/A ☒
		v.	Co-generated with a HW that must be combusted?	Yes ☐ No ☐ N/A ☒
	b.	If all responses to 14 a.i. through 14 a.v. are "No", HW is being improperly treated by dilution, violation of 3745-270-03(C). Is HW being treated by dilution?		Yes ☐ No ☐ N/A ☒

15.	Was the HW treated by wastewater treatment?		Yes ☐ No ☒ N/A ☐
	a.	Is a LDR treatment method, other than DEACT or a numerical value, specified for the waste? [3745-270-03(B) and 3745-270-40(A)(3)]	Yes ☐ No ☐ N/A ☒
NOTE: If "Yes", HW is improperly being treated by dilution.			
	b.	Does the waste carry the D001 code <u>and</u> contain ≥10% TOC?	Yes ☐ No ☐ N/A ☒
	c.	Does the wastewater treatment process include a process to separate/recover the organic phase of the waste?	Yes ☐ No ☐ N/A ☒
NOTE: If the answers to b & c are "yes" and "no", respectively, waste is improperly being treated by dilution and generator is in violation of [3745-270-03(B)] and 3745-270-40(A)(3)].			
NOTE: A list of separation/recovery processes are given in 3745-270-42 under RORG.			

SMALL QUANTITY UNIVERSAL WASTE HANDLER REQUIREMENTS – BATTERIES AND LAMPS			
Large Quantity Universal Waste Handler (LQUWH) = 5,000 Kg or more			
Small Quantity Universal Waste Handler (SQUWH) = 5,000 Kg or less			
PROHIBITIONS			
1.	Did the SQUWH dispose of universal waste? [3745-273-11(A)]		Yes ☐ No ☒ N/A ☐
2.	Did the SQUWH dilute or treat universal waste, except when responding to releases as provided in OAC rule 3745-273-17 or managing specific wastes as provided in OAC rule 3745-273-13? [3745-273-11(B)]		Yes ☐ No ☒ N/A ☐
WASTE MANAGEMENT AND LABELING/MARKING			
UNIVERSAL WASTE BATTERIES			
3.	Are batteries that show evidence of leakage, spillage or damage that could cause leaks contained? [3745-273-13(A)(1)]		Yes ☐ No ☐ N/A ☒
4.	If batteries are contained, are the containers closed and structurally sound, compatible with the contents of the battery and lack evidence of leakage, spillage or damage that could cause leakage? [3745-273-13(A)(1)]		Yes ☐ No ☐ N/A ☒
5.	Are the casings of the batteries breached, not intact, or open (except to remove the electrolyte)? [3745-273-13(A)]		Yes ☐ No ☐ N/A ☒
6.	If the electrolyte is removed or other wastes generated, has it been determined whether the electrolyte or other wastes exhibit a characteristic of hazardous waste? [3745-273-13(A)(3)]		Yes ☐ No ☐ N/A ☒
	a.	If the electrolyte or other waste is characteristic, is it managed in compliance with OAC Chapters 3745-50 through 3745-69? [3745-273-13(A)(3)(a)]	Yes ☐ No ☐ N/A ☒
	b.	If the electrolyte or other waste is not hazardous, is it managed in compliance with applicable law? [3745-273-13(A)(3)(b)]	Yes ☐ No ☐ N/A ☒
7.	Are the batteries or containers of batteries labeled with the words "Universal Waste - Batteries" or "Waste Battery(ies)" or "Used Battery(ies)?" [3745-273-14(A)]		Yes ☐ No ☐ N/A ☒
UNIVERSAL WASTE LAMPS			
8.	Does the SQUWH contain lamps in containers or packages that are structurally sound, adequate to prevent breakage, and compatible with contents of the lamps? Are containers or packages closed and do they lack evidence of leakage, spillage or damage that could cause leakage? [3745-273-13(D)(1)]		Yes ☐ No ☒ N/A ☐
	At the time of the inspection ProVia was storing waste metal halide lamps in an open cardboard box.		
9.	Are lamps that show evidence of breakage, leakage or damage that could cause a release of mercury or hazardous constituents into the environment immediately cleaned up? Are they placed into a container that is closed, structurally sound, compatible with the contents of the lamps, and lack evidence of leakage, spillage or damage that could cause leakage or releases of mercury or hazardous waste constituents to the environment? [3745-273-13(D)(2)]		Yes ☐ No ☐ N/A ☒
NOTE: ***Treatment (such as crushing) by a UWH is prohibited under this rule unless the facility is permitted for such activities [3745-273-31(B)].*** *A generator crushing lamps must manage lamps according to hazardous waste rules (OAC Chapter 3745-52). Lamp crushing is a form of generator treatment (OAC rule 3745-52-34). Crushed lamps must be transported by a registered hazardous waste transporter to a permitted hazardous waste facility using a hazardous waste manifest.*			
10.	Are the lamps or containers or packages of lamps labeled with the words "Universal Waste - Lamp(s)" or "Waste Lamp(s)" or "Used Lamp(s)?" [3745-273-14(E)]		Yes ☐ No ☒ N/A ☐
	At the time of the inspection ProVia was storing waste fluorescent lamps in a 4 foot fiberboard tube and waste metal halide lamps in a cardboard box. Neither of these containers was labeled.		
ACCUMULATION TIME			
11.	Is the waste accumulated for less than one year? [3745-273-15(A)]		Yes ☒ No ☐ N/A ☐

	a.	If not, is the waste accumulated over one year in order to facilitate proper recovery, treatment or disposal? (Burden of proof is on the handler to demonstrate) [3745-273-15(B)]	Yes ☐ No ☐ N/A ☒
NOTE: Accumulation is defined as date generated or date received from another handler.			
12.		Is the handler able to demonstrate the length of time the universal waste has been accumulated? [3745-273-15(C)] If yes, describe below: Length of time is tracked by date of the last time universal waste was shipped off site.	Yes ☒ No ☐ N/A ☐
EMPLOYEE TRAINING			
13.		Are employees who handle or have the responsibility for managing universal waste informed of waste handling/emergency procedures, relative to their responsibilities? [3745-273-16]	Yes ☒ No ☐ N/A ☐
RESPONSE TO RELEASES			
14.		Are releases of universal waste and other residues immediately contained? [3745-273-17(A)]	Yes ☐ No ☐ N/A ☒
15.		Is the material released characterized? [3745-273-17(B)]	Yes ☐ No ☐ N/A ☒
16.		If the material released is a hazardous waste, was it managed as required in OAC Chapters 3745-50 through 3745-69? (If the waste is hazardous, the handler is considered the generator of the waste and is subject to OAC Chapter 3745-52) [3745-273-17(B)]	Yes ☐ No ☐ N/A ☒
OFF-SITE SHIPMENTS			
NOTE: If a SQUWH self-transports waste, then the handler must comply with the Universal Waste transporter requirements.			
17.		Are universal wastes sent to either another handler, destination facility or foreign destination? [3745-273-18(A)]	Yes ☒ No ☐ N/A ☐
18.		Is the handler aware of DOT requirements for packaging and shipping? If no, make aware of 49 CFR 171-180.	Yes ☒ No ☐ N/A ☐
19.		Prior to shipping universal waste off-site, does the originating handler ensure that the receiver agrees to receive the shipment? [3745-273-18(D)]	Yes ☒ No ☐ N/A ☐
20.		Has the originating handler ever had an off-site shipment rejected by another handler or destination facility?	Yes ☐ No ☒ N/A ☐
	a.	If yes, did the originating handler receive the waste back or agree to where the shipment was sent? [3745-273-18(E)(2)]	Yes ☐ No ☐ N/A ☒
21.		If a handler rejects a partial or full load from another handler, does the receiving handler contact the originating handler and discuss and do <u>one of the following</u>:	Yes ☐ No ☐ N/A ☒
	a.	Send the waste back to the originating handler or send the shipment to a destination facility (If both the originating and receiving handler agree)? [3745-273-18(F)(2)]	Yes ☐ No ☐ N/A ☒
22.		If the handler received a shipment of hazardous waste that was not a universal waste, did the SQUWH immediately notify Ohio EPA? [3745-273-18(G)]	Yes ☐ No ☐ N/A ☒
EXPORTS			
23.		Is waste being sent to a foreign destination? If so:	Yes ☐ No ☒ N/A ☐
	a.	Does the small quantity handler comply with primary exporter requirements in OAC rules 3745-52-53, 3745-52-56, and 3745-52-57? [3745-273-20(A)]	Yes ☐ No ☐ N/A ☒
	b.	Is waste exported only upon consent of the receiving country and in conformance with the U.S. EPA "Acknowledgment of Consent" as defined in OAC rules 3745-52-50 to 3745-52-57? [3745-273-20(B)]	Yes ☐ No ☐ N/A ☒
	c.	Is a copy of the U.S. EPA "Acknowledgment of Consent" provided to the transporter? [3745-273-20(C)]	Yes ☐ No ☐ N/A ☒

USED OIL INSPECTION CHECKLIST
GENERATORS, COLLECTION CENTERS AND AGGREGATION POINTS

NOTE: 1. A facility is subject to the federal SPCC regulations (40 CFR 112) if it is non-transportation related (e.g., fixed) and has an aggregate above ground storage capacity greater than 1,320 gallons or a total underground storage capacity greater than 42,000 gallons of oil (including used oil), and there is reasonable expectation of a discharge to navigable waters.

2. Inspectors can check BUSTR's web-site at https://www.comapps.ohio.gov/sfm/fire_apps/bust/bustr/PublicInquiry.asp to determine if a UST containing used oil is registered with BUSTR. Inspectors may call BUSTR at 614-752-7938 or a BUSTR site coordinator to report an unregistered UST or a UST that appears to not be in compliance with BUSTR regulations. A list of BUSTR coordinators by county are at: https://www.comapps.ohio.gov/sfm/fire_apps/bust/bustr/SearchByCounty.asp.

PROHIBITIONS

1.	Does the generator manage used oil in a surface impoundment or waste pile? If yes:		Yes ☐ No ☒ N/A ☐
	a.	Is the surface impoundment or waste pile regulated as a hazardous waste management unit? [3745-279-12(A)]	Yes ☐ No ☐ N/A ☒

NOTE: For example, used oil contaminated scrap metal stored in a pile.

2.	Is used oil used as a dust suppressant? [3745-279-12(B)]		Yes ☐ No ☒ N/A ☐
3.	Is off-specification used oil fuel burned for energy recovery in devices specified in 3745-279-12(C)?		Yes ☐ No ☐ N/A ☒

NOTE: Multiple used oil checklists may be applicable if used oil handler is performing multiple tasks (e.g., If generating used oil and shipping directly to a burner, complete generator and marketer checklists at a minimum).

GENERATOR STANDARDS

4.	Does the generator mix hazardous waste with used oil? If so,		Yes ☐ No ☒ N/A ☐
	a.	Is the mixture managed as specified in 3745-279-10(B)? [3745-279-21(A)]	Yes ☐ No ☐ N/A ☒

NOTE: Used Oil mixed with listed (3745-51-30 to 3745-51-35) or characteristic (3745-51-20 to 3745-51-24) hazardous waste are subject to regulation as a hazardous waste, unless the listed hazardous waste is listed solely because it exhibits a hazardous characteristic, and the resultant mixtures do not exhibit a characteristic. Mixtures of used oil and CESQG hazardous waste are subject to OAC Chapter 3745-279.

5.	Does the generator of a used oil containing greater than 1,000 ppm total halogens manage the used oil as a hazardous waste unless the presumption is rebutted successfully? [3745-279-21(B)]		Yes ☐ No ☐ N/A ☒

NOTE: If used oil contains greater than 1000 ppm total halogens, it is presumed to be listed hazardous waste until the presumption is successfully rebutted.

6.	Does the generator store used oil in tanks; or containers; or a unit(s) subject to regulation as a hazardous waste management unit? [3745-279-22(A)]		Yes ☒ No ☐ N/A ☐
7.	Are containers and aboveground tanks used to store used oil in good condition with no visible leaks? [3745-279-22(B)]		Yes ☒ No ☐ N/A ☐
8.	Are containers, above ground tanks, and fill pipes used for underground tanks clearly labeled or marked "Used Oil?" [3745-279-22(C)]		Yes ☒ No ☐ N/A ☐
9.	Has the generator, upon detection of a release of used oil, done the following: [3745-279-22(D)]		Yes ☐ No ☐ N/A ☒
	a.	Stopped the release?	Yes ☐ No ☐ N/A ☒
	b.	Contained the release?	Yes ☐ No ☐ N/A ☒
	c.	Cleaned up and properly managed the used oil and other materials?	Yes ☐ No ☐ N/A ☒
	d.	Repaired or replaced the containers or tanks prior to returning them to service, if necessary?	Yes ☐ No ☐ N/A ☒

ON-SITE BURNING IN SPACE HEATER			
10.	Does the generator burn used oil in used-oil fired space heaters? [3745-279-23] If so:		
	a.	Does the heater burn only used oil that owner/operator generates or used oil received from household do-it-yourself (DIY) used oil generators?	Yes ☒ No ☐ N/A ☐
	b.	Is the heater designed to have a maximum capacity of not more that 0.5 million BTU per hour?	Yes ☒ No ☐ N/A ☐
	c.	Are the combustion gases from heater vented to the ambient air?	Yes ☒ No ☐ N/A ☐
NOTE: Ash accumulated in a space heater must be managed in accordance with 3745-279-10(E).			
GENERATOR TRANSPORTATION			
11.	Does the generator have the used oil hauled only by transporters that have obtained a U.S. EPA ID#? [3745-279-24]		Yes ☐ No ☐ N/A ☒
12.	If the generator self-transports used oil to an approved collection site or to an aggregation point owned by the generator: [3745-279-24]		
	a.	Does the generator transport used oil in a vehicle owned by the generator or an employee of the generator? [3745-279-24]	Yes ☒ No ☐ N/A ☐
	b.	Does the generator transport more than 55 gallons of used oil at any time? [3745-279-24]	Yes ☐ No ☒ N/A ☐
NOTE: Used oil generators may arrange for used oil to be transported by a transporter without a U.S. EPA ID # if the used oil is reclaimed under a contractual agreement (i.e., tolling arrangement).			
COLLECTION CENTERS AND AGGREGATION POINTS			
13.	Is the DIY used oil collection center in compliance with the generator standards in 3745-279-20 to 3745-279-24? [3745-279-30]		Yes ☐ No ☐ N/A ☒
14.	Is the non-DIY used oil collection center registered with Ohio EPA? [3745-279-31]		Yes ☐ No ☐ N/A ☒
15.	Is the used oil aggregation point in compliance with the generator standards in 3745-279-20 to 3745-279-24? [3745-279-32]		Yes ☐ No ☐ N/A ☒
NOTE: Complete Used Oil Generator and any other applicable used oil handler checklist (e.g., marketer, burner, etc.) for used oil collection centers and aggregation points.			

Pollution Prevention Assessment

Sugarcreek Industries

Sugarcreek Industries, Inc.

March 2004

Ohio EPA
Office of Pollution Prevention
122 South Front Street
Columbus, Ohio 43126

Division of Hazardous Waste Management-Southeast District Office
2195 Front Street
Logan, Ohio 43138

Introduction

Sugarcreek Industries, Inc.
425 Broadway Street
P.O. Box 460
Sugarcreek, Ohio 44681

The Ohio EPA, Office of Pollution Prevention (OPP) and the Division of Hazardous Waste Management, (DHWM) Southeast District Office, (SEDO) conducted a Pollution Prevention Assessment for Sugarcreek Industries, Inc. The purpose of the assessment was to review the company's operations and identify pollution prevention (P2) opportunities.

This report contains the results of assessment analysis and recommendations. Included in this report is information on:

- specific pollution prevention opportunities
- vendor information
- fact sheets and guidance materials
- resources and references

A site visit by SEDO-DHWM staff members Donna Goodman and Melody Stewart and OPP staff members Dave Foulkes and Ron Smith was conducted on December 9, 2003. The Sugarcreek Industries (Sugarcreek) representative for the assessment was Joanna Wenker. During the site visit DHWM and OPP collected data and information to identify P2 opportunities. Following the visit, DHWM and OPP researched specific P2 recommendations to help Sugarcreek evaluate and implement these opportunities.

Company Description

Sugarcreek, located in Sugarcreek, Ohio, is a manufacturer of windows and doors. The majority of these products are made from either aluminum or vinyl stock which is cut to dimensional sizes. Sugarcreek applies a paint coating to virtually all of their aluminum products, vinyl products are not coated. The following P2 recommendations and resources may assist Sugarcreek in reducing hazardous waste generation and related treatment and material costs.

Opportunity Findings

• This report is offered for educational and informational purposes only.

• Further evaluation is required to determine technical, economic and regulatory impact regarding these findings.

• The mention of any company names, products or services does not constitute endorsement or recommendation for use by Ohio EPA.

Overall Environmental Management

• •Quality programs integration with environmental improvement, cost savings and Environmental Management Systems

• •Total cost accounting/environmental accounting principles

Paint Line Improvements

• •Continue to optimize and improve electrostatic paint system

• •Investigate alternative coatings and coating systems

Paint Clean-up Improvements

• •Investigate alternative solvents and cleaning systems

Pre-treatment System Improvements

• •Extend bath life

• •Investigate additional rinse stage

• •Investigate membrane filtration technologies for alkaline and conversion coating stages

Solid Waste Reductions and Recycling

• •Solid waste reductions and recycling

Energy Efficiency and Green Building Information

• •Energy efficiency

• •Green building information

Overall Environmental Management

• •Quality programs integration with environmental improvement, cost savings and Environmental Management Systems

Sugarcreek is ISO 9001 certified and is dedicated to improving quality. These efforts to continually improve quality can be equally successful at addressing environmental compliance and improvement for the facility. A major component of the quality concept is the elimination of wastes from the manufacturing process. This concept is also at the center of pollution prevention. By considering inputs and outputs from individual processes and looking to minimize wastes and improve quality, significant economic and environmental benefits are possible. The pollution prevention recommendations provided in this report might be excellent projects for quality teams to mutually reduce wastes and improve process performance. The following case study information is provided to illustrate the significance of this approach.

Neaton Auto Products Manufacturing case study

Case Study Summary: Neaton has developed a pro-active and successful P2 program including hazardous material reduction, energy conservation, recycling and problem-solving techniques that have improved many areas of manufacturing. They established quality teams from production, engineering and maintenance to investigate scrap rates. Through these activities, Neaton has saved more than $500,000 from internal scrap reductions, plastic recycling projects and production line improvements. For more information see the attached case study or view it online at www.epa.state.oh.us/opp/gov/neaton.pdf.

Along the lines of quality programs integration with environmental improvement and cost savings, integrating the quality concept with waste reduction can produce excellent benefits. This process could be an excellent first step in the direction of adopting an environmental management system for the facility. Environmental management systems (EMS) are a continual cycle of planning, implementing, reviewing and improving the actions that an organization takes to meet its environmental obligations. Pollution prevention is an

integral component of an EMS. Pollution prevention identifies opportunities to reduce waste, allows flexibility and effective long term planning and increases efficiency. An EMS helps a company manage the environmental aspect of its business practices in a systemic way. Implemented correctly, it helps to ensure a company's compliance with all applicable laws and regulations, boosts productivity and enhances competitiveness. Sugarcreek is highly encouraged to integrate their strong quality initiative in this direction.

For more information about this specific opportunity, please contact Mike Kelley at michael.kelley@epa.state.oh.us or (614) 644-2930.

• •Total cost accounting/ environmental accounting principles

Significant pollution prevention opportunities can be realized when the cost of managing each waste stream is tied back to the production process where it originated. If all of the true costs: material, labor, maintenance, health/safety, liability, environmental treatment/disposal, training, record keeping, and capital are not directly associated with a process, then the true potential savings of the project can be inaccurate. Fortunately, this practice is well documented, and quite a number of useful tools exist for the implementation of a pollution prevention project. Below are both case study and reference materials for implementing total cost accounting for pollution prevention and quality projects.

Total cost accounting case studies and references

Cost Analysis for Pollution Prevention, Washington State Dept. of Ecology. www.ecy.wa.gov/pubs/95400.pdf
This is an example of one of the many tools to not only identify hidden costs, but compare existing conditions to prospective P2 opportunities. This worksheet lists the total costs associated with an existing process/or product. The baseline can be directly compared with the proposed or changed alternative. It allows a facility to see the future cash flows and value from making the process or product change.

An excellent way to address waste reduction and waste costs is the Total Cost Accounting Method. Although

more strenuous to initially implement, it holds the potential to allow Sugarcreek to identify cost problems and opportunities in individual product lines.

Total Cost Accounting Methodology
www.aiche.org/cwrt/projects/cost.htm

Environmental Management Accounting International Web site- Hosted by the Environmental Management Accounting Research and Information Center
www.emawebsite.org/index.htm

Analysis of Pollution Prevention Investments Using Total Cost Assessment: A Case Study in the Metal Finishing Industry
www.pprc.org/pprc/sbap/metalfin/tca_rept.html

Carnegie Mellon Full Cost Accounting Case Study
www.ce.cmu.edu/GreenDesign/gd/education/SemiconductorCaseStudy.pdf

Calculating the True Cost of Waste
www.epa.state.oh.us/opp/Truecosts.htm

Paint Line Improvements

• •Continue to optimize and improve electrostatic paint system

Sugarcreek uses electrostatic paint system to coat aluminum extrusions and parts. These parts are hung vertically on a over-head conveyor system and pass through two opposing silo-type paint shrouds. A turbo disk rotary paint applicator on a vertical reciprocator is used in both shrouds.

Sugarcreek has been and is making extensive changes to the current painting system in pursuit of reducing paint related waste streams. They have invested considerable capital in upgrading and improving their electrostatic system with more automated controls. Sugarcreek is encouraged to work with their vendor, ITW Ransburg, to ensure that the system is set up properly and maintained. This upgrade may enable Sugarcreek to reduce paint losses and reduce solvent used for cleaning paint lines.

With more automated and spray triggering/application control, Sugarcreek can measure and track application efficiency. Once base-line information is established, Sugarcreek can implement the planned system automation adjustments to help reduce some of the paint losses related to over spray and line clean up.

Measure & Improve Transfer Efficiency

There was a considerable amount of overspray (paint loss) in both shrouds at the beginning and end of each automatic paint stroke. There was also overspray from coating passing through gaps in the hanger brackets. Improving and optimizing the painting process can be accomplished through equipment, material substitutions and adjustments.

Sugarcreek should continue to make adjustments and improvements to the paint line to eliminate excessive overspray. As equipment is updated, more precise control of the disk and reciprocator is possible to only paint the length of the aluminum extrusion. Sugarcreek can also investigate placing parts closer together. This will allow less paint to pass between parts and on to the shroud wall.

Increasing transfer efficiency is the most effective way for reducing overspray. Even slight increases in transfer efficiency can result in significant pollution reductions as well as guaranteed cost reductions. Transfer Efficiency (TE) is the amount of paint solids deposited on an object, divided by the amount of paint solids sprayed at the object, multiplied by 100%. In simple terms TE means, how much paint is applied to the part (Pollution Prevention in the Paints and Coatings Industry. EPA/625/R-96/003. U.S. EPA, Office of Research and Development,189 pp.).

Example of annual cost savings due to TE improvement from 30% to 45%

The following demonstrates the impacts of a TE increase of 15% on a generic paint line.

	Waste Costs with TE = 30%	Waste Costs with TE = 45%	Savings Due to TE Improvement
Cost of waste + filters + labor	$29,649.18	$15,530.52	$14,118.66
Cost of wasted paint	$73,101.44	$38,291.23	$34,810.21
Total cost of waste	$102,750.62	$53,821.75	$48,928.87

Table 9-3, page 77, EPA 625/R-96/003

Annual cost savings due to Sugarcreek improving TE by 20%	To demonstrate the significance of transfer efficiency as it relates to waste reduction at Sugarcreek, OPP and DHWM estimated the following raw material savings and hazardous waste reductions that could be achieved by increasing transfer efficiency at Sugarcreek. For the current type of materials being coated, the present system should be measured to ascertain the transfer efficiency (amount of paint on the part vs. over spray). Rotary disks have been documented to have a TE of 60-90%. Sugarcreek may find that as much as 50% of the current paint being applied is wasted. This provides an excellent opportunity to reduce coating and waste clean-up and disposal costs.
Key Findings and Assumptions (*based on information from Sugarcreek, 2002 Annual Hazardous Waste Report and typical industry figures)	Sugarcreek may be able to reduce coating losses by 20% through improving transfer efficiency and optimizing their paint line process. TE = (Mass solid coating deposited/Mass solid coating used) x 100 TE of turbo disk = 60-90% 9,395 gallons of paint/year @ $28/gallon* = $263,060 5,995 gallons of xylene/year @ $1.44/gallon* (turnaround and reclaim) = $8,633 1,375 gallons of paint related waste @ $150/drum* = $3,750
Economic and Environmental Benefits	Annual raw material savings for reducing coating loss by 20%

Paint
9,395 gal/year x 0.20 = **1,879 gal/year** coatings savings
1,879 x $28/gal = **$52,612** annual coating cost savings
1,375 gallons (paint waste) x 0.20 = **275 gal/year** waste reduction
275 gal x $150/drum = $750

Xylene as thinner and clean-up solvent
5,995 gal/year x 0.20 = **1,199 gal/year** solvent reduction
1,199 x $1.44/gal = **$1727** savings in solvent reclaim

Note: These estimated figures do not included other potential cost savings from improving transfer efficiency, including reduced booth clean-up and longer paint filter life.

• •Investigate alternative coatings and coating systems

Sugarcreek may also want to investigate other coatings and/or coating systems to replace their current line set-up. Many of these alternatives are already available through Sugarcreek's current suppliers and vendors.

Low volatile organic compound (VOC) Polyester Baking Enamels

Sugarcreek currently uses Sherwin-Williams PERMACLAD 2400 High Solids Polyester Baking Enamel as their coating. Sherwin-Williams has developed a new ultra-low VOC, polyester, baking enamel that emits less than 1.0 pound of VOCs per gallon (versus 3.0 pound/gallon). For more information about PERMACLAD Ultra Low VOC Polyester Baking Enamel, see the attached information or contact Sherwin-Williams.

Sherwin-Williams Chemical Coatings Division
800-524-5979
www2.sherwin-williams.com/im/industrialcontractor/permaclad.asp

There are additional coating manufacturers that produce high solids polyester baking enamels and meet the AAMA 2603 specification that might have lower VOC content. For example, PPG manufactures POLYCRON III High Solids Polyester coatings. For more information, see attached information or contact PPG.

www.ppg.com/car_indcoat/duracron_polycron.pdf

PPG Industries, Inc.
151 Colfax St.
Springdale, PA 15144
(800) 258-6398
www.industrial-coatings.com
E-mail: coexcoatings@ppg.com

Waterborne and reducible coatings

Sugarcreek could pursue alternatives to current paint ingredients and possible paint solids recovery. Sugarcreek has a well established relationship with Sherwin-Williams. Sugarcreek may be in an excellent position to request modifications to paint formulations to achieve a reduction in the hazardous content of their paint inventory. Many current formulations of paint for similar metal finishing practices are being manufactured that are waterborne. These paints are not solvent-free but are thinned and cleaned-up with water. This provides excellent cost savings for the customer as well as the manufacturer. This is due to the elimination of the hazardous waste solvent component resulting from line flushing and clean-up.

The latest discs utilize higher rotational speeds, producing finer atomization, the ability to apply higher-solids and waterborne coatings, and high transfer efficiency. These devices are often mounted on reciprocators in very-high-production installations.

Electrostatically applying waterborne coatings can be a problem, in that their water content increases their electrical conductivity. To circumvent this, manufacturers have developed increasingly sophisticated "voltage-block" systems. These electrically isolate the spray applicator and prevent high voltage from following the conductive path through the paint-supply line to the waterborne coating supply. Switching to waterborne is now easier because of the new technologies available in voltage-isolating systems. Waterborne can be electrostatically applied safely, economically and in minimum floor space (newer voltage-block systems eliminate the need for isolation cages to deal with the conductivity of waterborne).
(*Choosing Better Ways to Spray, What spray painters are*

doing to lessen VOCs and improve transfer efficiency.. Jerry Poll, PF Online, www.pfonline.com/articles/039702.html)

Sherwin-Williams has developed a water reducible baking enamel called KEM AQUA 1400. It is a waterborne alkyd-amino enamel designed for general metal finishing at 2.3 pounds/gal of VOCs. For more information about KEM AQUA 1400, see attached information.

Likewise Sugarcreek may wish to investigate the option of capturing and returning paint solids to their manufacturer, so that this material may be incorporated into other products. The following case study material is provided to demonstrate the viability of this opportunity.

Waterborne Case Studies

New York State Governor's Awards for Pollution Prevention Success Story: The Sentry Group
The Sentry Group summary: Sentry developed a partnership with Sherwin-Williams Paint Company to formulate a water-based touch-up paint that would be less toxic than the standard solvent-based paints. In 2000, all the touch-up paint had been re-engineered by Sherwin-Williams Paint Company using a less toxic water-based paint that would adhere to the powder coat paint used by Sentry. The substitution to a water-based paint system resulted in a 98% decrease in released solvent emissions from Sentry. Sentry's switch to a water-based coating process resulted in a 91% reduction in hazardous waste generation from 1996 through 2001. The water-based coating process is non-hazardous and does not generate a hazardous waste. Despite an increase in production of Sentry storage units in 2001, there was an 89% reduction in hazardous waste disposal costs due to a conversion to a water-based coating process.
www.dec.state.ny.us/website/ppu/success/sentry.html

Painting Progress Benefits Environment
Saturn HAPs reduction summary: With the improved robots and electrostatic technology, Saturn more than doubled the amount of basecoat paint ending up on the car parts, with paint overspray collected in a water system for treatment. The improvement translates into an

estimated 40% reduction of the amount of paint that Saturn uses annually and a reduction in the volume of paint sludge generated. Previously, paints contained 7-11% HAPs and 9-14% Toxic Chemical ingredients. Five recently-adopted environmentally preferable base coat paints contain less than 1.5% HAPs and less than 2% Toxic Chemicals.
www.state.tn.us/environment/dca/tp3/pdf/ss-saturn-air02.pdf

Powder Coatings

Sugarcreek should also investigate converting to a powder coating system. Sugarcreek generates a significant quantity of paint and solvent related hazardous wastes within the electrostatic paint line. This waste stream represents a major opportunity to reduce the overall costs related to the existing coating process. Within the manufacturing community, a sweeping revolution is occurring to address this common situation by converting to powder coating systems. Not only are powder coating systems more efficient in terms of product coverage and coating durability, they have shown to greatly reduce waste costs. Coating systems such as powder coating can increase final TE above 90%. The concept of total cost accounting addressed earlier in this report should be utilized to fully capture the potential cost savings from this opportunity. The following resources and case study information are provided so that Sugarcreek can fully explore the viability of this option.

Sugarcreek's current paint application equipment vendor, ITW Ransburg, is a ITW Finishing Partner with ITW Gema. ITW Gema manufactures electrostatic powder coating equipment. The similarities in equipment and controls may make an easier transition to powder coating. ITW Gema also uses reciprocators designed for use on automatic coating systems with programmable logic controls (PLC). They feature efficient automation for optimized coating quality with accurate, digital position indication capable of handling up to 64 reciprocating programs. This system will minimize excessive over spray and increase the efficiency of a powder coating system.

For more on this system, see attached document.

ITW Gema-North Central Regional Manager
Stefano L. DiMarco
4141 W. 54th Street
Indianapolis, IN 46254
(800) 628-0601
Fax: (317) 298-5010
powdersales@itwgema.com
www.itwgema.com/products/products.main.html

Powder Coating Case Studies

Powder Coating is Finish of Choice For Aluminum Window/Door Fabricator, Plating and Surface Finishing, July 1993, v80, n7, pp 8-9.
Case Study Summary: Modern Windows and Awning Company (MOCO) uses a six stage power washer to clean metal storm and screen doors prior to powder coating. The power has alkaline aqueous wash, followed by water rinse. The final rinse contains a corrosion inhibitor. Cleaning is followed by oven drying and powder coating. The powder coating process yields a high quality finish on the windows and doors and has very little waste. The dry powder overspray is collected and reused. Fixtures used in the spray booth collect very little of the powder and are cleaned occasionally by burning off the paint buildup. The entire cleaning/finishing process uses no ozone depleting solvents.
http://clean.rti.org/alt_cs.cfm?id=pw&cat=cs

Powder Coating Advantages-Acme needed a new finishing system, so it researched its options...
Acme Fabrication Company summary: Wanted to switch to powder coating system. Compared capital cost, associated cost and payback cost with low-solids, high-solids and waterborne systems.
www.pfonline.com/articles/069704.html

Chrysler Reduces Air Emissions Using a Powder Antichip Primer Process
Chrysler summary: At Chrysler's Newark, Delaware facility where this demonstration took place, annual solid-waste generation decreased from 600 tons to about 40 tons. Material, sewer, and water intake costs were also reduced. The facility reduced CO_2 emissions by 2,308 tons/year and NO_X emissions by 20,533 pounds/year

compared with air contaminant emissions resulting from the traditional solvent-borne paint spray system. In addition to environmental savings, the facility experienced significant energy savings. The powder booth for the antichip primer process is about half the size of the liquid spray booth so less energy is needed for ventilation, saving over 1 billion Btu/year at the Newark facility.
www.oit.doe.gov/nice3/factsheets/chrysler.pdf

Powder Coating Gives Conveyor Manufacturer Competitive Advantage In Customer Satisfaction and Cost Savings
Hytrol Conveyors summary: Switched to powder coating. Their output before it switched to powder coating was about 2 million pounds of steel a month. It is now up to 3.2 million pounds a month. Hytrol has more than 30 colors on hand. It can spray 101 different colors, overall, by getting the formulated colors it needs from its powder supplier.
www.powdercoating.org/media/casestudies/hytrol.htm

Powder Coating Provides Competitive Edge in Aluminum Extrusion, Gives Florida Firm's Products Value-Added for Customers
Florida Extruders International summary: Florida Extruders' sales have grown from $5 million in 1991 to more than $40 million today, making the company a dominant supplier of aluminum extrusions in Florida and beyond. Powder coating has played a critical role in the company's success, giving Florida Extruders a competitive advantage from the start that has proven hard to beat.
www.powdercoating.org/media/casestudies/floridaex.htm

Powder Coating Vendors

The Sherwin-Williams Company
101 Prospect Avenue
Cleveland, OH 44115
(216) 566-2309
low cure powder coatings - POWDURA
www2.sherwin-williams.com/chemicalcoatings/news02Sep24B.asp

Becker Powder Coatings Inc.
3875 Brookham Drive
Grove City, OH 43123
(614) 539-8456
Fax: (614) 539-8457Paul Johnson - President

Morton International Inc.
407 Long Pointe Drive
Avon Lake, OH 44012
(440) 930-5667
Fax: 440-930-5668
Phil Bechtold - Sales Director-East
www.mortonpowder.com

Seibert Powder Coatings
11110 Berea Road
Cleveland, OH 44102
(216) 631-2002
(800) 231-2002
Fax: 216-631-6211
Sam Rhue - President

PPG Industries Inc.
19699 Progress Drive
Strongsville, OH 44149
(440) 572-2800
(800) 450-2652
Fax: (440) 572-0848
Barry Keating - Global Market Manager, Powder Coatings
www.ppg.com

DuPont Powder Coatings, USA, Inc.
9800 Genard
Houston, TX 77041
(713) 939-4000
Fax: (713) 939-4027
Steve Houston
www.dupontpowder.com

Paint Clean-up Improvements

• •Investigate alternative solvents and cleaning systems	Sugarcreek currently uses an extensive amount of xylene to clean paint equipment and lines. A variety of solvent alternatives exist for improving Sugarcreek's cleaning practices. Either aqueous solutions or less hazardous solvents such as, lactate or soy ester compounds could perform this function while eliminating HAPs (Hazardous Air Pollutants) from the process.
Methyl Soyate and Methyl Lactate	Methyl soyate is a soy methyl ester produced by the transesterification of soybean oil with methanol. It is commercially available from numerous manufacturers and suppliers. As a solvent, methyl soyate has important environmental- and safety-related properties that make it attractive for many industrial applications. It is lower in toxicity than most other solvents, is readily biodegradable, and has a very high flash point and a low level of volatile organic compounds (VOCs), which also increases worker safety (Market Opportunity Summary: Soy-Based Solvents. United Soybean Board, 2002). Methyl soyate can be used as an industrial cleaning solvent intended to replace mineral spirits, lacquer thinner, xylene, *methyl ethyl ketone*, and other hydrocarbon degreasing solvents.
Methyl Soyate Information	For more information regarding soy-based solvents, see the enclosed documents, *Market Opportunity Summary: Soy-Based Solvents* and *Soy Methyl Ester Solvent Technical Background.* www.unitedsoybean.org www.ohiochemical.com/Soy.html The following is a list of companies/vendors that supply and manufacture alternative cleaning and degreasing products.

PURAC America
111 Barclay Boulevard
Lincolnshire, IL 60069
847-634-6330
Fax: 847-634-1992
pan@purac.com
www.purac.com

New Century Coatings
4320 East San Remo Ave.
Higley PA, 85236
602-625-8925
www.newcenturycoatings.com

Franmar Chemical, Inc.
P.O. Box 97 Normal IL, 61761
800-538-5069
Fax: 309-862-1005
E-mail: franmar@franmar.com
www.franmar.com

The Clean Environment Company
P.O. Box 4444, Lincoln NE, 68504
800-266-2353
Fax: 402-464-1175
E-mail: envirocycl@aol.com
www.cleanenvironmentco.com

Phase III, Inc.
916 E. Baseline Rd., Ste. 101
Mesa AZ, 85204
480-503-2847
Fax: 480-503-1077
E-mail: info@phaseiii.com
www.phaseiii.com

Florida Chemical Co., Inc.
351 Winter Haven Blvd. NE
Winter Haven FL, 33881
863-294-8483
Fax: 863-294-7783
E-mail: info@floridachemical.com
www.floridachemical.com

CO_2 cleaning	Additionally, there may alternative cleaning systems, such as CO_2 blasting, which could also be utilized as a substitution for cleaning with a solvent. The following resources are provided for exploring this opportunity. Recent advances in cleaning with CO_2 have provided companies with an opportunity to remove materials that had previously been resigned to aggressive solvent based chemicals. CO_2 has been found to remove materials such as adhesives, plastics, rubbers, paints, resins and a number of other materials. Because CO_2 produces no additional wastes and does not contaminate the residue, it affords opportunities for recovery and or recycling of this material. It would be recommended to contact a vendor or vendors and have a demonstration or trial period to establish the right equipment and media for most effectively cleaning paint lines and equipment. The following resources are provided to demonstrate the practicality and feasibility for pursuing this opportunity.
CO_2 cleaning resources and case studies	*Oak Ridge National Laboratory ORNL- Development of Cryogenic Blaster Technology* *Case Study Summary:* "Conventional methods for removing paint and surface contaminants often require solvents or high-speed abrasive materials that affect the environment and can increase the amount of material to be cleaned up," said John Haines of ORNL's Fusion Energy Division. "Our pellet accelerator uses frozen pellets that strip the contaminant and then evaporate, separating the contaminant -- such as paint or grease -- from the cleaning media." "In addition to its uses for stripping paint and grease, the pellet blaster can be used for cleaning of ships, barges and process equipment, removal of lead paint from storage tanks and solvent-free removal of gummy, tar substances from surfaces. Three companies have licensed the carbon dioxide cryoblaster: Cryogenic Applications F of Clinton; TOMCO Equipment Company of Loganville, Ga.; and Alpheus Cleaning Technologies Corp. of Rancho Cucamonga, Calif. www.ornl.gov/Press_Releases/archive/mr19970331-00.html

Wright Patterson AFB, CO_2 Blasting P2 Projects
Carbon Dioxide Blast
PROJECT NUMBER: 42557
Project summary: The carbon dioxide blast system removes substrate contaminants by propelling frozen CO_2 pellets at high velocities. The dry ice hardens selected contaminants and then dislodges them by the impact of the dry ice pellets. Environmental benefits at OC-ALC could be as high as a 200 ton reduction in volatile organic compound (VOC) emissions per year. Additionally over 3 million gallons of industrial waste rinse water can be eliminated. Preliminary test data indicates less damage to aircraft substrates than the plastic media blast process. www.jdmag.wpafb.af.mil/inactproj4.htm#42557

Carbon Dioxide Technology
PROJECT NUMBER: 41421
Project summary: Replacing traditional cleaning solvents with the use of carbon dioxide pellets under pressure, for removing surface corrosion and soils from jet engine components. The procedure is currently in use on gas turbine engine components at OC-ALC. Engines include J79, J57, TF30, TF33, TF1, F101, F108, and F110 engine parts and subassemblies which are being prototyped. The pellets disintegrate and immediately sublime (vaporize) upon impact, leaving no residue. The process removes carbon deposits, surface rust, soils, rubber sealants, gaskets, paint residue and much more on surfaces such as ceramics, metal alloys, plastics, and composites. The process is also gentle enough to blast critical sealing surfaces, threaded parts, etc., without damage to the surface. www.jdmag.wpafb.af.mil/inactproj4.htm#41421

Case Corporation-Replacing Solvent Cleaners with a CO_2 Pelletizer-Blasting Unit
www.dnr.state.wi.us/org/caer/cea/publications/casestudy/casestudies/ts032.htm

CO_2 cleaning system vendors	RSG - Technologies, Inc. 29 Industrial Park Drive Dover, NH 03820 (603) 299-8434, Fax: (603) 299-0364 Info@RSG-Technologies.com www.co2-blasting.us/Applications.htm Cold Jet® Solutions (Midwest) 455 Wards Corner Road Loveland, Ohio 45140 (800) 337- 9423 ext. 360, Fax: (513) 831- 1209 info@coldjetsolutions.com www.coldjetsolutions.com/paint-booth.html ChemFree Corporation 8 Meca Way Norcross, Ga. 30093 (800) 521-7182, Fax: (770) 564-5533 www.chemfree.com/ Alpheus Dry Ice Blasting Ohio Regional Office 1-800-700-0745 sales@cae-alpheus.com www.DryIceBlasting.com/ Smart Sonic Corporation 6724 Eton Avenue Canoga Park, CA 91303 (818) 610-7900, Fax: (818) 610-7909 smt@smartsonic.com www.smartsonic.com/ Va-Tran Systems, Inc. 677 Anita Street, Suite A Chula Vista, Ca 91911 (800) 379-4231, Fax: (619) 423-4604 info@vatran.com www.vatran.com/

TOMCO$_2$ Equipment Company
3340 Rosebud Road
Loganville, GA 30052
(800)979-9791
www.tomcoequipment.com/co2clart.htm

Pre-treatment System Improvements

• •Extend bath life

Sugarcreek uses a five-stage pretreatment system to clean and prepare the aluminum extrusions for painting. Currently four of the stages are being used; alkaline cleaning, rinse #1, rinse #2 and a conversion coating. Rinse #2 counter-flows to rinse #1 at 5 or 6 gallons per minute. This overflows to wastewater treatment. The alkaline cleaning and conversion coating stages are static tanks that are dumped every 5 or 6 weeks. The stages are monitored by computer for pH and conductivity.

Extending bath life will reduce chemical use and raw material costs, and reduce water use and wastewater generation. Sugarcreek should continue to carefully record flow rates of rinse water used on the rinse stages in order to accurately measure the true cost savings and environmental benefits of these recommendations. Flow volume and frequency can be monitored in the rinse baths to determine optimal metal/chemical concentration based on production and quality standards. Rinse water use can be minimized by ensuring that flow rates (overflow volume) and tank dumping schedules are optimized. Optimizing the use of the conductivity controller may help increase bath life, save on chemical costs and reduce water use and wastewater generation.

Sugarcreek's pre-treatment chemical vendor, GE Betz, also provides and manufactures feed and control systems. They may be able to consult and advise Sugarcreek on tank life and dump schedules.

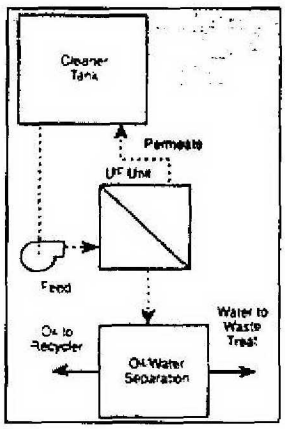
Conductivity Control Case Study

Reducing Rinse Water use with Conductivity Controls. Merit Pollution Prevention Project for Metal Finishers, U.S. EPA Region 9. Fact Sheet. 4 pp. MPPPMF, 1997.

	Case Study summary: Conductivity controls reduce water use by 43% (from 516,000 gallons/month to 296,000 gallons/month) on copper, chrome and nickel electroplating lines. Savings were estimated at $14,300 annually. The payback was 1.0 year. http://web.epa.state.oh.us/opp/condcs.pdf
• •Investigate additional rinse stage	Significant savings can be achieved by reducing water use and resulting wastewater generation. These savings result from reduced water/sewer fees and wastewater treatment costs. One method to achieve water use and wastewater generation reductions would be by adding an additional rinse stage after stage #1 and #2. Sugarcreek could then utilize countercurrent rinsing in a sequence of three stages instead of only two. With the addition of a third rinse stage, Sugarcreek can reexamine rinse water flow rates and overflow rates. An additional stage might also yield a higher quality pre-treatment finish before parts are painted. The current 5 or 6 gal/min rate could be reduced by a few gallons per minuet or more. This flow rate reduction could have an significant impact on daily water consumption and wastewater generation levels.
• •Investigate membrane filtration technologies for alkaline and conversion coating stages	Alkaline cleaners lose their ability to clean due to the buildup of contaminants such as oil and grease. Membrane filtration technologies have been demonstrated to be cost-effective technologies to remove these contaminants and prolong the life of cleaning solutions. The types of membrane filtration considered for aqueous cleaners consists of microfiltration, ultrafiltration, and reverse osmosis. These filtration methods are closely related in their methodology differing mostly in the porosity range used. While microfiltration has the largest pore size and reverse osmosis has the smallest, there is overlap between the methods at their limits. These processes all operate on the principle of separating suspended or dissolved solids in solutions by use of a membrane surface. The passage of liquid (called permeate) and the blocking of solids is a function of the size of the openings in the membrane, the size of the impurities, and the magnitude of the pressure applied.

Membrane filtration can increase the life of aqueous cleaning solutions and reduce water consumption while subsequently reducing wastewater generation. These benefits and reductions, and purchasing cleaner less frequently, can make membrane filtration a worthwhile investment because of short payback periods. Ultrafiltration is effective for the removal of dissolved solids and emulsified oils. Ultrafiltration is probably the most common membrane separation technology for the recovery of aqueous cleaning solutions. The figure below shows a typical ultrafiltration installation on an alkaline cleaner tank. Ultrafiltration allows most, if not all, of the detergents and other chemicals in the cleaner solution to pass through the membrane for return to the process. (*Recovery/Recycling Methods for Platers*, Stephen R. Schulte, P.E. Hixson Engineering. Cincinnati, OH. www.pfonline.com/articles/pfd0336.html)

Sugarcreek could benefit from ultrafiltration by extending solution life and minimizing chemical and treatment costs. Ultrafiltration of alkaline cleaning baths is a demonstrated technology that can reduce cleaner usage by 50% or more.



Membrane filtration case studies

Morton Metalcraft Co.
Case Study summary: Morton Metalcraft operates two metal fabricating plants in Morton and employs about 600 people. The company fabricates heavy equipment cabs, tanks, body parts, and transport frames for companies such as John Deere, Caterpillar, and Hallmark. The intern's goal was to determine source reduction options for its processes.

Results:
Laser cutting creates a surface oxide that is incapable of being painted. The intern found an additive that could be added to the spray washer's alkaline cleaning bath to remove this surface scale. Components that are not painted should have the oxide removed in a separate acid

bath. The 5-stage washer used prior to powder coating consists of the following steps - alkaline cleaning, rinse #1, rinse #2, iron phosphate, and final rinse #3. The intern made the following recommendations:

-Implement counter-current rinsing from rinse #3 to rinse #2 and install conductivity meters. These measures have the potential to reduce wastewater by 14 million gallons annually while saving over $40,000.
-Purchase and install an ultrafiltration system on the alkaline cleaning bath to remove oils and suspended solids in the bath. This has the potential to cut the use of alkaline cleaner by 65% per year, extend the life of the cleaner bath from 3 months to one year, and save $14,000.
-Install a reverse osmosis system on the final rinse tank. This could reduce water consumption by over 7 million gallons annually and save over $25,000. This measure could also lead to a reduction of rejected parts from the painting operations since a higher purity of water will be utilized in the cleaner baths.
www.epa.state.il.us/p2/internships/projects/2000.html

Pollution Prevention Project Report. Jupiter Coil Coating Division, Sept. 1999. The Indiana Clean Manufacturing Technology and Safe Materials Institute.
www.ecn.purdue.edu/CMTI/Technology_Transfer/Jupitp2-web.htm

Membrane filtration vendors

Filtration Solutions, Inc.
432 Sand Shore Rd., Unit 8
Hackettstown, NJ 07840
(877)-286-6880
Fax: (908)-684-4100
E-mail:info@filtsol.com

Koch Membrane Systems, Inc.
850 Main Street
Wilmington, MA 01887
800-343-0499
www.kochmembrane.com

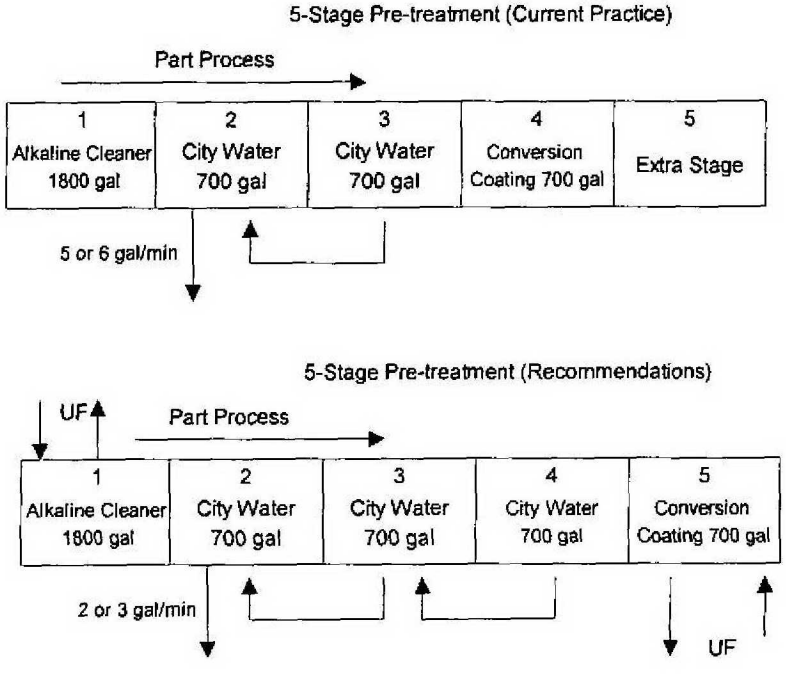
GE Osmonics
5951 Clearwater Drive
Minnetonka, MN 55343-8995
800-355-9950
www.gewater.com/index.jsp

Water & Wastewater Equipment Company
P.O. Box 647
Willoughby OH 44094
440-942-7070
www.wweco.com

Kinetico Engineered Systems Inc.
10975 Kinsman Road
Newbury, OH 44065
800-633-5530
www.kinetico.com

The Arbortech Corporation
3607 Chapel Hill Rd
McHenry, Il 60050
(815) 385-0001
www.arbortech.com/

Illustration of Pre-treatment system recommendations



Solid Waste Reductions and Recycling

• •Solid waste reductions and recycling

Sugarcreek has opportunities for reducing their solid waste from paint hooks and scrap steel. Sugarcreek could also investigate a small closed loop cleaning system for paint hooks.

Additionally, some process related materials may have residual value as a reusable resource for other industries. Materials can be listed free-of-charge on materials exchanges such as the Ohio Materials Exchange (OMEx). OMEx can be accessed at www.epa.state.oh.us/opp/omex/omex.html.

Examples of recent listings under "*Materials Wanted*" at OMEx

W03-09 Date Updated: 3/19/02
SURPLUS CHEMICALS, SOLVENTS, RESINS
Wanted surplus chemicals, solvents, resins, pharmaceuticals. Any quantity, bulk drums or bags. From all geographical locations. PA
Ted Stephanoff-President, Mid-Atlantic Chemical
273 Blacksmith Road, Oley, PA 19547
Phone: 610/689-8500 FAX: 610/689-8570

W10-15 Date Received: 7/28/99
FERROUS AND NON-FERROUS SCRAP METALS
All non-ferrous and ferrous scrap metals for recycling. OH
Jeffrey Gordon-President, Valley Metal Recycling, Inc.
2449 Valley Street, Dayton, OH 45404
Phone: 937/233-4880 FAX: 937/233-5880

W09-07 Date Received: 5/30/02
SCRAP CARDBOARD
Always paying top dollar for scrap cardboard. Competitive hauling rates. OH
Steve Grossman, The Grossman Group
1309 Cherokee Rose Drive, Columbus, OH 43081
Phone: 614/899-6759 FAX: 614/895-9330

Energy Efficiency and Green Building Information

• •Energy efficiency	Sugarcreek has significant energy costs from their ovens, motors and lighting. With high annual operating expenses for energy, there may be significant opportunities to improve energy efficiency and reduce costs for some or all of these areas.
ODOD Office of Energy Efficiency Plant Wide Industrial Assessments	The Ohio Department of Development (ODOD) works with companies like Sugarcreek to identify and implement these types of opportunities. Facilities may be able to achieve savings exceeding 20%. Information on energy efficiency audits and energy performance contracting can be found at their *Plant Wide Industrial Assessment* Web page. What are Industrial Assessments? The Office of Energy Efficiency works with a team of experts and interested parties to help a company evaluate its industrial processes, with an emphasis on energy use. The assessments identify a list of actions the company may want to undertake to make it more competitive, including the cost of each action and the payback.
Industrial Assessment success story	A plant-wide industrial assessment was performed at a metal casting company in Ohio in 2000. The company implemented a few of the recommendations and has seen productivity increase 75% and energy use decrease by 20%.
ODOD Industrial Assessment contact information	Manny Anunike Office of Energy Efficiency (614) 466-4092 eanunike@odod.state.oh.us www.odod.state.oh.us/cdd/oee/c_i_pia.htm
Federal Energy Management Program technical resource center	The State of Ohio has received a grant from the U.S. Department of Energy to establish a *Federal Energy Management Program* technical resource center. This center disseminates information on performance contracting in all sectors, using the federal energy savings

performance contract model as the standard. This center is available to assist with any aspect of performance contracting.

Contact information	Bill Manz Office of Energy Efficiency (614) 466-7429 wmanz@dod.state.oh.us
Energy Performance Contracting Consultants	Information about Energy Performance Contracting, where savings are guaranteed by the contractor, can be found at www.escperform.org/whatis.htm. Perfection Services of Dayton 5721 Webster St. Dayton, Ohio 45414 (937) 415-0675 Fax: (937) 415-1673 www.perfectionservices.com/html/performance.htm Johnson Controls 6156 Trust Drive Holland, OH 43528 (419) 866-9292 Fax: (419) 866-9335 www.johnsoncontrols.com/cg-energy/
U.S. DOE energy conservation assessments	The U.S. Department of Energy's Office of Industrial Technologies has a program whereby engineering faculty and students from certain universities perform industrial assessments at no cost to the manufacturer. These look for ways to improve productivity, reduce waste, and save energy. www.oit.doe.gov/bestpractices/assessments.shtml www.oit.doe.gov/iac/ The University of Michigan may be able to come to Ohio to do these assessments. The criteria needed to be eligible is, in part, gross annual sales below $100 million and annual utility bills more than $100,000 and less than $2 million. Their contact is David Everest at 734-763-7471 or deverest@engin.umich.edu.

	The University of Dayton also offers industrial assessments. Dr. Kelly Kissock Industrial Assessment Center, Department of Mechanical and Aerospace Engineering University of Dayton 300 College Park Dayton, Ohio 45469-0210 937-229-2852 Fax: 937-229-4766 kkissock@udayton.edu www.engr.udayton.edu/udiac/
Additional energy conservation information	The US Department of Energy's Office of Industrial Technologies Web site provides information regarding energy efficiency for motors, voltage unbalance and other issues. www.oit.doe.gov/bestpractices/motors/ www.oit.doe.gov/bestpractices/pdfs/motor2.pdf www.oit.doe.gov/bestpractices/pdfs/motor1.pdf www.oit.doe.gov/bestpractices/motors/factsheets/mc-0382.pdf
Addition attachments and references	*Guide to Industrial Assessments for Pollution Prevention and Energy Efficiency* (CD ROM), U.S. EPA-Office of Research and Development. EPA/625/C-99/003. June 2001 The Association of Energy Engineers www.aeecenter.org/ Ohio University Energy Performance Contracting Project www.escperform.org/stories/ohio.htm
• •Green Building Information	The following green building and energy efficiency program information is provided to Sugarcreek for determining the applicability of their EnergyStar™ products in various regional or national programs.
Rebuild American Program	Rebuild America is a network of hundreds of community-based partnerships across the nation who are saving energy, improving building performance, easing air

	pollution through reduced energy demand, and enhancing the quality of life through energy efficiency and renewable energy technologies. Created by the U.S. Department of Energy (DOE) in 1994, Rebuild America serves as a mechanism for revitalization and job creation in many U.S. communities. www.rebuild.org/index.asp
Energy Star Program	ENERGY STAR is a government-backed program helping businesses and individuals protect the environment through superior energy efficiency. www.energystar.gov/
LEED Program	The LEED (Leadership in Energy and Environmental Design) Green Building Rating System™ is a voluntary, consensus-based national standard for developing high-performance, sustainable buildings. Members of the U.S. Green Building Council representing all segments of the building industry developed LEED and continue to contribute to its evolution. LEED standards are currently available or under development for: • New construction and major renovation projects (LEED-NC) • Existing building operations (LEED-EB, Pilot version) • Commercial interiors projects (LEED-CI, Pilot version) • Core and shell projects (LEED-CS, Pilot version) • Homes (LEED-H) www.usgbc.org/
Ohio Department of Development-Office of Energy Efficiency	The Office of Energy Efficiency (OEE) works to promote the natural linkage of energy, economics and environment. Its efforts are designed to address the energy efficiency needs of those most impacted by higher energy costs such as low- and moderate-income residents, small businesses and local governments. The Office concentrates its efforts in the commercial/industrial (including transportation), residential and education sectors. www.odod.state.oh.us/cdd/oee/services.htm