

DEPARTMENT OF ENVIRONMENTAL QUALITY
AIR QUALITY DIVISION
ACTIVITY REPORT: Self Initiated Inspection

U2914520826001

FACILITY: Clover Technologies		SRN / ID: U29145208
LOCATION: 515 Union St		DISTRICT: Lansing
CITY: Ithaca		COUNTY: GRATIOT
CONTACT: Jeremy Charvat , Plant Manager		ACTIVITY DATE: 06/19/2014
STAFF: Michelle Luplow	COMPLIANCE STATUS: Compliance	SOURCE CLASS:
SUBJECT: Self-initiated unannounced compliance inspection.		
RESOLVED COMPLAINTS:		

Inspected by: Michelle Luplow
Other AQD Staff Present: Doreen Lehner, Toxics Unit

Personnel Present: Jeremy Charvat, Plant Manager (jeremy@cartridgesareus.com)
Bob Kelly, Project Manager (bkelly@cartridgesareus.com)
Drew Quinn

Purpose:

Conduct an unannounced self-initiated compliance inspection of Clover Technologies. Clover Technologies does not have an air use permit and this was the first time they have been inspected by state government.

Facility Background:

J. Charvat said that Clover Industries, formerly known as Cartridges Are Us, has been located at 515 N. Union for approximately 5 years. This is the former location of Hushpuppies shoes. Clover Industries is an inkjet cartridge remanufacturer of Epson, Canon, and other inkjet cartridges. They collect the cartridges from the end users and refill, test, and repack the cartridges for resale. Any cartridges that cannot be remanufactured are taken apart and each component is recycled. Clover currently runs 2 shifts, 5 days per week. According to J. Charvat there are 3 – 4 inks that Clover formulates and mixes in-house and said that approximately 90% of each ink type is water. J. Charvat said the facility operations 2 shifts per day, 5 days per week. He also said that as far as he knows Clover Technologies is the largest, if not the only, inkjet cartridge remanufacturer in the state of Michigan.

Inspection:

Doreen and I arrived at Clover Industries at approximately 1:00 p.m. on June 19, 2014 and met with J. Charvat and B. Kelly. I provided J. Charvat with an "Environmental Inspections: Rights and Responsibilities" brochure along with a May 2012 Permit to Install Exemptions handbook and my business card.

Clover has a warehouse where they store all recycled components, cartridges ready to be shipped, the ink storage containers, and printers used to test the cartridges. J. Charvat said that MSDSs for all inks can be found on their computer, set up specifically for finding MSDSs.

Clover's Testing Center has various drilling, welding, cleaning, and milling operations used to process and restore the ink cartridges. Clover has a few machines that drill holes into the ink cartridge to allow for better cleaning later in the process, they also have machines that mill off the cap from the cartridge to remove the foam. These two processes are exempt from a Permit to Install (PTI) per Rule 336.1285(l)(vi) because emissions are released into the general in-plant environment. The milling operations specifically capture the particulate from the process through an in-house baghouse that does not discharge to atmosphere.

There are 6 ultrasonic welders onsite to weld the caps back onto the cartridges and 2 seam welders. These are exempt from PTI per Rule 336.285(i) for brazing soldering, welding or plasma coating equipment.

To clean residual ink from the cartridges, Clover uses what they call "vac boils" where baths of reverse osmosis (RO) water are brought to boil at a temperature lower than water's boiling point (achieved under vacuum). These, along with ultra-sonic cleaning units also using RO water, remove the ink from the cartridges. These pieces of equipment are exempt under Rule 336.1281(e) for equipment used for washing or drying materials. There are no VOCs involved in this cleaning process.

The ink sponges removed from the ink cartridges are washed in 6 laundry washing machines located onsite to remove the ink from the sponges before installation into the remanufactured cartridges. These washing machines are exempt per Rule 336.1281(e), also. I spoke with Megan McMahon, the NPDES inspector for Gratiot County, who verified that Clover Industries is in the NDPEs system for discharges to water from their facility, including the discharges from their washing machines.

Clover also has a "hot box" that B. Kelly said is electrically heated and that J. Charvat said is used for dehumidifying the ink cartridges. Cartridges are kept in the dehumidifying chamber for 14-28 hours at 118°F, 20% humidity. This equipment is exempt per Rule 336.1281(e).

There are 5 water heaters located onsite, all of which burn natural gas. Two water heaters have an input of 199,900 BTU/hr, and the 3 additional water heaters are 159 BTU/hr each. All 5 are exempt from a PTI per Rule 336.282(b)(i) for fuel burning equipment that is used for service water heating and burns sweet natural gas and has a rated heat input capacity less than 50 MMBTU/hr. They are also exempt from the National Emission Standards for Hazardous Air Pollutants (NESHAP) for Industrial, Commercial, and Institutional Boilers at Area Sources of Hazardous Air Pollutants (HAPs) (40 CFR 63 Subpart JJJJJJ) as they would be classified as "hot water heaters" or "gas-fired boilers."

All ink cartridges that have a printhead as part of the cartridge are quality control- tested for print-quality by printing 1 test per cartridge on printer paper. The quality-control inkjet printing at Clover is exempt per Rule 287(c) for a surface coating line that uses no more than 200 gallons (minus water) per month. B. Kelly and J. Charvat determined that, on average, Clover Technologies prints 2.06 gallons of ink per month. Clover determines usage based on mass balance pre- and post-weights of ink cartridges after printing text onto sheets of paper. Grams of ink used for 1 test page is then calculated. Clover provided me with a spreadsheet that lists all cartridges and their gram/page ink output. Grams of ink per page ranges from 0.05 – 0.15, depending on the cartridge. Drew Quinn said that they used the actual number of cartridges manufactured, multiplied by the grams per page printed and divided by 12 to get the average grams per month for each type of cartridge. Using a worst-case scenario of 0.15 grams of ink/page for all cartridges manufactured and tested for the entire year of 2013, the total ink applied to paper minus water is 83 gallons, which is less than the amount allowed for one month. Clover is in compliance with the 287(c) exemption. A future exemption for this type of coating process may be developed in the future.

The inks that are formulated in-house are mixed under ventilation, which is sent to a carbon filter and does not vent to atmosphere. This process is exempt under Rule 336.287(k) because the ink for the surface coating line (printing ink on paper).

Clover Technologies is in compliance with all state and federal regulations at this time.

NAME Michelle M. Sporn

DATE 7-21-14

SUPERVISOR M. M.