FENTON

Handcrafted American Glass Artistry

9-6

10-15-10
Reply to a Notice of Violation
Docket No. 04003149
License No. SUB-491 2010001

A. The uranium powder is packed in 25 lb pails. The Company was in a production run and uranium inventories were low. At the rate of use, we knew that two pails could be ordered and that we would be able to receive them without exceeding the license limit.

1. The violation occurred because the uranium oxide powder was inadvertently ordered twice. Knowing that NFS (the supplier) was about to shut down for vacation, the RSO had contacted NFS requesting 50 lbs be shipped at once. The Fenton Purchasing department had also ordered 50 lbs.
2. To correct this, all orders now have to go through purchasing to avoid duplication. If by some circumstance too much uranium is on hand, the overage will be returned to NFS.
3. Centralized ordering responsibility will avert future duplication of orders.
4. Full compliance was achieved when the amount of uranium powder no longer exceeded the licensed limit. This occurred on 07-10-10. 1

B.

1 The violation was due to poor follow-up.
2 The RSO has personally reviewed all processes and personally conducted one-on-one training with all Authorized Personnel.
3 The training and review requirements have been published and distributed to the Union Safety Representative and to Fenton Management. The requirements have also been added to a "tickler" file.
4 Full compliance was achieved on October 15, 2010

C.

1. The violation was due to poor follow-up.
2. Review and retraining has been implemented with all persons who handle the uranium bags.
3. The training and review requirements have been published and distributed to the Union Safety Representative and to Fenton Management. The requirements have also been added to a "tickler" file.
4. Full compliance was achieved on October 15, 2010.

Michael Fenton
Michael D Fenton
Safety Director, RSO

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100 YEARS
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Fenton Art Glass Company

Safety Program for Radioactive Materials

Last revised 09-24-10

Definitions:

Authorized persons are personnel who have successfully completed the "Uranium Loading Procedures for Furnacemen" training. These persons are authorized to add the bags of depleted uranium oxide during the furnace filling process.
DUO – depleted uranium oxide
RSO – Radiation Safety Officer
Radiation Safety Officer Authorized Personnel (RSOAP) are persons who have successfully completed the "Safety Program for Radioactive Materials" training.
Currently the RSOAP's are Wayne King and Mike Fenton
step-off pad – is a pad or flat object on which a person would stand while removing footwear. The footwear would typically be left in the contaminated zone. The wearer's feet would not touch any surface that could have potential contamination. Gloves (disposable is preferable) should be worn to remove the footwear. The gloves would also remain in the contamination zone.

1. **Fundamental Requirements**

A. No Fenton Art Glass Employee is authorized to handle loose radioactive materials.

No Fenton Art Glass Employee is authorized to open a drum containing loose radioactive materials.

All on-site handling of loose radioactive materials is to be done only by properly trained and equipped personnel.

B. No procedure is to be willfully altered or circumvented without approval of the Radiation Safety Officer. Inadvertent changes in the procedure are to be reported at once to the Radiation Safety Officer.

C. Any spill or discovery of contamination is to be reported at once to the Radiation Safety Officer.

D. All persons handling radioactive materials shall be able to recognize the radioactive signage.

E. The Batch Mixing Supervisor maintains a record of the quantity of DUO used each day. Each time a DUO drum is emptied, the Batch Mixing Supervisor will verify that the on-hand inventory matches the amount used. If a discrepancy is found, the Batch Mixing Supervisor will advise the RSO. The two will attempt to determine the cause for the error and will take actions to prevent a similar future occurrence.

F. All RSO Authorized Personnel handling the double-bagged radioactive materials shall be trained in the proper use of the Bicron Surveyor M portable count meter and PGM Pancake Probe following the training outline titled, "Use of the Bicron meter and Pancake Probe." The Bicron Meter will be stored in the Lab.

G. The Bicron Surveyor M portable count meter and PGM Pancake Probe are to be calibrated annually.

H. No eating, drinking, or smoking while in the Color Room or when handling radioactive materials.

I. The primary radioactive materials storage site is the Radioactive Materials Storage Cabinet in the Color Room. If for some reason an alternate storage location is needed, the secondary site is the room at the bottom of the feldspar storage silo. The silo is concrete stave construction with a metal man door at the base. The silo is located in a secure area controlled by the Mixing Department where there is no traffic other than for maintenance. It is adjacent to the Color Room but outside the walls of the Company. Any containers of radioactive materials stored there must be clearly marked to identify their contents.

J. In the event of a radiation exposure, radiation exposure reports shall be communicated to all affected personnel.

K. Radiation exposure reports shall be kept confidential. The reports will be stored onsite. Each affected employee shall have access to these reports.

L. A historical synopsis of the Company's Radiation Program will be kept with the Radiation Safety Officer. A description of significant events pertaining to the Company's "Safety Program for Radioactive Materials" will be entered therein.

M. TRAINING: All persons who have successfully completed the "Safety Program for Radioactive Materials" training will be referred to as RSO Authorized personnel (RSOAP).

1. Annual training sessions will be held for previously trained personnel and as often as is necessary for new personnel.
2. Training subjects shall include:
   a. A review of the Company's "Safety Program for Radioactive Materials"
   b. A review of "How to use the Bicron Surveyor M portable Count Meter and PGM Pancake Probe".
   c. A review of the Depleted Uranium Oxide Material Safety Data Sheet and a discussion of the hazards associated with radiation exposure.
   d. A review of the "Uranium Loading procedures for Authorized persons".
   e. A review of the "Radioactive Materials Receipt Record".
   f. A review of the "Radioactive Materials Spill Procedure"
3. Trainee comprehension to be verified orally by the Radiation Safety Officer during training sessions and by observation/demonstration if deemed appropriate by the RSO.
4. Signature of each trainee and trainer after each training session.
5. There may arise a need for persons other than the RSOAPs to perform the placement of the bagged radioactive materials into the screw charger. These persons would be referred to as "Authorized Persons". They would retrieve the loaded pail from the Radioactive Materials Storage Cabinet. They would follow the procedures related to placement of the bags into the screw charger. They would check their gloved hand with the Bicron meter. They would return the emptied pail to the cabinet. They would lock the cabinet. Refer to the "Uranium

Loading Procedures for Furnacemen" document attached to the license application.

N. A current list of RSOAP and Authorized persons approved to handle the double-bagged materials will be posted on the Radioactive Materials Storage Cabinet.

O. Always lock the Radioactive Materials Storage Cabinet when leaving it unattended.

2. Packing Specifications for Radioactive Materials

A. DUO powder will be shipped to Fenton packaged in plastic lined metal containers.

B. DUO powder will be packaged in heavy duty sealed plastic bags. Each bag will usually contain up to four pounds of DUO. As an additional safeguard against leaking or cross contamination, each sealed bag will be sealed inside a second heavy duty plastic bag. This packaging will be done by properly trained and appropriately equipped personnel.

3. Procedure for Receiving Radioactive Materials

A. Equipment and Supplies Needed:

1. Step-off pad
2. Disposable plastic gloves
3. Bicron Surveyor M Portable Count Meter with PGM Pancake probe
4. Large plastic bag for containment of potential radioactive waste
5. Tape to seal the plastic bag
6. Wipes
7. A copy of the "Radioactive Materials Receiving Procedure" which includes the "Radioactive Materials Receipt Record"
8. "Radioactive Material" labels

B. The uranium oxide drum will be inspected for contamination by authorized personnel only. The "Radioactive Materials Receipt Record" will be used as a guide for the proper handling and inspection of the drum. Check marks and CPM counts will be entered as indicated.

If contamination is found at any stage of the inspection:

1. All Fenton Personnel will be removed from the immediate vicinity taking care not to spread any contamination. Use a step off pad at the perimeter of the potentially contaminated area. You may check footwear and other items for contamination at the step-off pad.
2. Contaminated wipe samples, gloves, shoes, etc. used by Fenton personnel (and the delivering driver, if still onsite) will be placed in a plastic bag at the contamination site. The bag is to be sealed with tape and left with the contaminated container.
3. If still onsite, the trailer will be placed off limits to all personnel including the driver. Close the trailer doors.
4. The delivering carrier's hazardous spills emergency response team [phone #] will be contacted immediately to handle all clean-up/decontamination and disposal. The radioactive materials vendor (NFS) will also be contacted. [423 743 6995 Steve Jackson] [423 791 1009 Brad McKenna]
5. The event will be assessed to determine whether urine samples are necessary. . The driver will be advised of the assessment result.

If no contamination is found:

4. Storage of Uranium Oxide:

A. Be sure the container is properly marked with the Radiation Hazard signs.

B. Transport container to the Color Room using a two-wheeled dolly. Care should be taken to prevent punctures.

C. Open the container and check the lid for contamination as described in the "Radioactive Materials Receipt Record".

D. Lock the container in the Color Room Radioactive Materials Storage Cabinet. This cabinet is marked with Radiation Hazard signs.

5. Transfer of Sealed DUO Bags from Storage to Furnace

A. Put on disposable gloves.

B. To safely load the pail and transport the DUO bags to the furnace:
1. Prepare the dedicated pail by placing a heavy duty plastic bag inside the pail to line the pail's interior.
2. The bag should be long enough to reach the bottom of the pail at the same time the open end drapes at least three inches over the pail's top edge.
3. The pail should be marked with a "Radioactive Warning" sign and should be stored inside the Radioactive Materials Storage Cabinet. The pail is to be dedicated for use with radioactive materials only.

C. Place the pail into the pail holder.
1. The pail holder is a special shelf inside the cabinet which securely holds the pail in a tilted position just above the DUO drum with the lip of the pail extending over the inside lip of the drum.
2. If a spill should occur during the transfer of the bags to the pail, the spill would fall into the open drum or into the pail instead of into the cabinet or onto the floor, walls, or adjacent objects.

D. Remove the bags one at a time from the drum and place in the bottom of the lined pail.
1. Don't drop the bags into the pail. Place them gently on the bottom of the pail.
2. Move slowly.
3. Use one gloved hand only for moving the bags.

E. After all the bags are in the lined pail, do not touch anything with the gloved hand until the glove has been checked for contamination using the Bicron Meter. Our radioactive materials supplier is to provide Fenton with unopened bags that have no surface contamination. If the Bicron meter detects loose materials, then that would indicate that a bag is leaking or that the bags are not properly free of radioactive materials.

If contamination is detected

1. If possible, alert the RSO or a RSOAP for assistance.
2. Place the contaminated gloves inside the pail bag.
3. Put on clean gloves.
4. Seal the pail bag with tape.
5. Place the pail bag inside the DUO drum.

6. Seal the drum.
7. Evaluate whether an outside contractor is needed for decontamination.
8. Notify the radioactive materials supplier.
9. Assess the incident to determine whether urine samples are necessary.

If no contamination is detected

1. Close the DUO drum with the lid.
2. Lock the Radioactive Materials Storage Cabinet.

6. Furnace Filling Procedure prior to melting

Furnace Filling Procedure Prior to Melting

_____ A. Verify that the melting furnace burners are set on "No Fire".

_____ B. Verify that the melting furnace damper is closed then preheat furnace.

_____ C. Bags of Uranium are to be placed into the screw charger fill chute by an Authorized Person Only.

_____ D. Always use the same gloved hand to touch the Uranium bags. Don't touch anything else with the glove.

_____ E. Visually observe that the bags are going into the charger barrel and are not hanging up at the entrance to the barrel. This can be accomplished by observing either the throat of the feed chute or observing the dark powder as it exits the end of the barrel into the furnace. This is easy to observe due the light color of the rest of the raw materials. Normal travel time from the chute the end of the barrel is 10 to 15 seconds. If the uranium does not appear, shut off the hopper and let the screwcharger run until the feed chute is empty. The bag most likely will be wedged in the throat of the feed chute. Turn off the screwcharger and reposition the bag so that it slides through the chute. Do not use any object to try to push the bag into the chute. Use the gloved hand only. Take care not to puncture the bag.

_____ F. No Uranium is to be added after charging the first one half hopper. This procedure ensures a flushing action to clear any residual Uranium out of the screw charger.

The bags of Uranium are to be fed through the screw charger during the first one quarter to one third of the hopper's contents. Then the rest of the hopper is charged into the furnace. Because the Uranium is buried several inches deep, the barrel is allowed to touch the batch pile. As the filling occurs, the discharge end of the screw charger's barrel will be observed occasionally to be sure the barrel does not come in contact with any portion of the batch that contains the uranium.

_____ G. **Under no circumstance is the furnace to be raked during the fill and melt cycle.** Stirring the furnace is OK after the materials are melted.

_____ H. After the Uranium bags are fed into the furnace, check the gloved hand with the Bicron Meter being careful not to touch the glove with the probe.

If contamination is detected

6. Remove both gloves and place inside the pail's bag, taking care not to touch anything else.
7. Remove your shoes before leaving the immediate tank area. Leave the shoes inside the potentially contaminated area. This will ensure that any spilled Uranium is not carried away from the tank area on the bottoms of shoes.
8. Do not allow anyone to enter the potentially contaminated area. Erect barriers as soon as possible.

9. Contact MDF (the RSO), THB (The Plant Engineer), and RWK immediately.

If no contamination is found:

_____I. Return the pail and bag to the locked Radioactive Materials Storage Cabinet and return the Bicron Meter and probe to Lab storage.

_____J. Any deviation from the procedure as described herein is to be reported immediately to MDF (RSO).

_____K. Dispose of the pail bag as each drum of DUO is emptied. This procedure will guard against long-term deterioration of the bag. Check for contamination before disposal.

7. Occupational Dose

Individual monitoring devices and bio–assays are not part of the "Safety Program for Radioactive Materials" due to the low levels of radiation exposure. However, in the event of a spill or other incident which could broadcast uranium dust into the air, bio-assays would be required of each potentially exposed person.

8. Audits

The RSO is responsible for conducting periodic audits of the various aspects of the "Safety Program for Radioactive Materials".

- On-the-job observations will incorporate the use of the written protocols.
- Deviations from accepted practices will be noted on the written protocol sheets.
- Deviations will be assigned to a responsible person to correct.
- All RSOAP's and AP's will be notified of each audit results.

9. Spill Procedure: emergency procedures to be followed in the event of a release/spill of radioactive materials.

1. In the event that a fire, tornado, airplane crash, or some other catastrophic event compromises the radioactive materials storage area:
   a. Dial 200 to activate the in-plant emergency response system
   b. Evacuate as appropriate
   c. Call 911
   d. Prevent the spread of contaminant
   e. Record all personnel that could have been exposed.
   f. Call NRC Operations at 1-301-951-0550 to report the event.
   g. Notify NFS at 1-423-743-6995 or 1- 423-791-1009

2. Prevent the spread of contamination.
   a. Immediately isolate the area affected by the contaminant. Erect barriers assign persons to prevent area access to unauthorized personnel.
   b. Persons in the area of contamination must have bottoms of shoes and clothing surveyed, if appropriate.
   c. No one is to enter the contaminated area without the proper PPE. PPE required may include shoe covers full body suits, gloves, goggles, and the appropriate half-face respirator.

3. Assess the spill.
   a. The RSO, Plant Engineer, and other available RSOAP's shall determine whether Fenton personnel can effectively and safely clean up or whether outside help is necessary. The decision will depend on the:

1. amount of contaminant spilled
2. area and equipment contaminated
3. accessibility of contaminant to Fenton cleaning equipment and personnel

4. Report and document.
   a. Report the spill/release to the NRC if the quantity exceeds four ounces.
   b. Record the event in the NRC Historical Records maintained by the RSO no matter what quantity was spilled/released.
   c. If urine samples are collected, record all bioassay results for each affected employee. Communicate these results to affected employees.

If bioassays are deemed appropriate

5 perform the assays within 24 hours of the exposure.

a. Ensure that all exposed persons are tested.
   1. Review the records in 1. e.
   2. Interview all persons believed to be in the area.
   3. Post a notice of the Company's intent to test all exposed personnel instructing anyone not yet scheduled for a test to report to the personnel office for testing instructions.

6. Conduct an investigation as soon as is possible. Include Safety Partners, president, Vice president, Plant Engineer, RSOAP's, and witnesses.

RECORD OF TRAINING

I have read, been trained in, and understand the foregoing "Safety Program for Radioactive Materials".

Trainee's printed name	Trainee's signature	Date
WAYNE KING	Wayne King	10-13-10

I verify that the above listed trainees have successfully demonstrated that each understands and is capable of complying with the requirements as stated in the "Safety Program for Radioactive Materials". Each trainee is now designated an RSO Authorized Person (RSOAP).

Trainer's printed name	Trainer's signature	Date
Michael Stenton	M Stenton	10-13-10

Fenton Art Glass Company
Step-by-step guide for loading furnace with uranium material

Revised 10-07-10

Objectives:

- No spills of Uranium Oxide
- Use of proper melting settings on furnaces
- Adherence to prescribed batch filling procedures

Setting up for the uranium fill:

_____1. Put on disposable plastic gloves (stored in color room)
_____2. Obtain Bicron Meter with probe (stored in Lab)
_____3. Turn on Meter "check battery". Verify that battery strength is good. Spare battery is inside the meter.
_____4. Turn meter to "x 1" setting.
_____5. Perform background check at least 20 feet from any radiation source. Record the CPM on the "CPM RECORD" stored in the Bicron meter carrying case.
_____6. Obtain previously loaded pail from Radioactive Materials Storage Cabinet located inside the Color Room.
_____7. Lock Radioactive Materials Storage Cabinet.
_____8. Carry loaded pail and the Bicron meter to the furnace area and place in a protected area to avoid damage.

Furnace Filling Procedure Prior to Melting

_____ A. **Preheat** furnace to AVOID DAMAGE TO THE FURNACE
_____ A. Verify that the melting furnace burners are **set on "lowest fire".**
_____ B. Visually verify that the **furnace damper is closed**.
_____C. Place the loaded bucket on top of the screwcharger's control panel.
_____ D. Bags of Uranium are to be placed into the screw charger fill chute by an **Authorized Person Only**.
_____ E. Always **use the same gloved hand** to touch the Uranium bags. Don't touch anything else with the glove .
_____F. **Visually observe** that the bags are going into the charger barrel and are not hanging up at the entrance to the barrel. This can be accomplished by observing either the throat of the feed chute or observing the dark powder as it exits the end of the barrel into the furnace. This is easy to observe due the light color of the rest of the raw materials. Normal travel time from the chute the end of the barrel is 15 seconds. If the uranium does not appear, shut off the hopper and let the screwcharger run until the feed chute is empty. The bag most likely will be wedged in the throat of the feed chute. Turn off the screwcharger and reposition the bag so that it slides through the chute. Do not use any object to try to push the bag into the chute. Use the gloved hand only. Take care not to puncture the bag.
_____ G. **No Uranium is to be added after charging the first one half hopper**. This procedure ensures a flushing action to clear any residual Uranium out of the screw charger.
All bags of Uranium are to be fed through the screw charger during the first one

half of the hopper's contents. Then the rest of the hopper is charged into the furnace. Because the Uranium is buried several inches deep, the barrel is allowed to touch the batch pile. As the filling occurs, the discharge end of the screw charger's barrel will be observed occasionally to be sure the barrel does not come in contact with any portion of the batch that contains the uranium.

_____ H. **Under no circumstance is the furnace to be raked during the fill and melt cycle.** Stirring is permitted.

_____ I. After the Uranium bags are fed into the furnace, **check the gloved hand** with the Bicron Meter taking care not to touch the glove with the probe. There is no need to check the barrel or anything else.

_____ **If contamination is detected**

1. Remove both gloves and place inside the pail's bag, taking care not to touch anything else.
2. Be sure that no one has stepped in any potentially contaminated area. Having the bucket on top of the control panel means that the bags' travel from the bucket to the charger loading chute is less than two feet. This is all above the charger. Therefore, any loose material will fall onto the charger and not onto the floor. This will ensure that any spilled Uranium is not carried away from the tank area on the bottoms of shoes.
3. Do not allow anyone to enter the potentially contaminated area. Erect barriers as soon as possible.
4. Contact MDF (the RSO), THB (The Plant Engineer), and RWK immediately.

_____ **If No contamination is found:**

1. Return the pail and bag to the locked Radioactive Materials Storage Cabinet and return the Bicron Meter and probe to Lab storage.

_____J. Any deviation from the procedure as described herein is to be reported immediately to MDF (RSO).

I have read, been trained in, and understand the "Uranium Loading Procedures for Authorized Persons".
I have read, been trained in, and understand the "Use of the Bicron Meter and Pancake Probe".
I have read the MSDS for uranium oxide. I understand that the material I am handling is radioactive and is hazardous.

Trainee's printed name	Trainee's signature/trainer's initials	Date
Wayne King	Wayne King / MDF	10-11-10
Eric Turner	Eric Turner / MDF	10-11-10
Bennie Mellinger	Bennie Mellinger / MDF	10-12-10
Bruce K Nelson III	Bruce K. Nelson III	10-12-10
Dennis R Cunningham	Dennis R Cunningham MDF	10/14/10
Bernard L. Barley Jr	Bernard L. Barley Jr	

I verify that the above listed trainees have successfully demonstrated that each understands and is capable of complying with the requirements of the "Uranium Loading Procedures for Authorized Persons".

Trainer's printed name	Trainer's signature	Date
Michael Fenton	Michael Fenton	