AFFIDAVIT
DESCRIBING UNMONITORED AIRBORN EXPOSURES OF URANIUM
AT
NUCLEAR METALS, INC., WEST CONCORD, MASSACHUSETTS

Introduction

I, , residing at provide this affidavit to describe specific and unmonitored radioactive material exposures that occurred during my employment between 1978 and 2005 at the Nuclear Metals, Inc. West Concord manufacturing facility.

During my employment I held positions of . I have personal experience with the standard process practices for and the opportunities for unmonitored worker exposures to airborne depleted uranium compounds. I was never provided with formal safety training for any of the positions that I held.

Foundry Practices

When I interviewed for a position it was with , told me not to worry and that I would get plenty of work in . I think this was a standard recruiting method for , a place no one wanted to work.

When I first started at NMI there was no change area to enter . In about 1980 a shoe change area was installed and draw string coveralls were used by technicians in 1979-1980 for about a year. These coveralls were never washed so they became highly contaminated and their use was discontinued. There was a Gatorade station at the shoe change area at the entrance.

We were able to smoke and drink coffee at the furnaces during a melt since these would take several hours to complete. always had his coffee and paper at the furnace.

About the mid 80s we had to subject ourselves to a whole body count when we returned from 2 week vacation shutdown. You spent about 1/2 hour in the "coffin" to get your count. We would do this in groups of 4 at a tractor trailer that was parked out back. I remember several people failed this test they were told to take a shower with a special cleaning solution and an HP tech present. You then would go in for another whole body scan. I always wondered how we could still have contamination on us after returning from 2 weeks vacation. The requirement was dropped after a few years since it was very costly.

There was a furnace explosion one time where a lab coat was draped over the rail. There were numerous holes in the lab coat and quartz pieces every where. I was literally knocked unconscious on several occasions as a result of furnace explosions.

On occasion, the break-off-ski rods would bend. These were the rods that were inserted to the bottom of the crucible that would be used to break out the breakoffski plug. This permitted the molten uranium to drop into the graphite distribution cup. On one occasion when the rod got bent in Furnace 5A, outside office, got a longer rod and placed it in the furnace. was the . However, it punctured the pour cup letting the molten DU escape and melt through the water jacket. It caused an explosion and people were jumping for their lives. The released steam caused the top plate to pop off. After this incident a technician, , who was there refused to ever work in again. had gotten badly burned and went to the hospital.

We had several furnace explosions in the late 70s and early 80s.

I have a VHS movie of furnace lid flash that was taken sometime in the mid 1980s. The term "flash" is a bit of an understatement as I will explain. was an HP Technician who wished to document what typically happened when we opened a furnace and pacified the lid. In order to pacify the furnace lid we would spray it with a streaming mist of water. Since the melting process would vaporize the uranium, the vapors would deposit on the underside of the furnace lid. These deposits were very reactive.

As the video shows, when the water hits the lid the reaction is immediate, violent, loud and smoky. was the technician shown in the video. He is wearing all of the proper safety attire that we rarely used, like a respirator. Those of us in the background and not shown in the video were not wearing any protection, respirators or face shields or fire resistant jacket. We got burned when the lid exploded as shown in the video. (was going to attempt to copy the video for inclusion with the petition he was preparing.) disappeared in a cloud of smoke. You won't see any PAM being worn.

In typical foundry practice, we had a 4" vent line that was placed near the furnace lid when we pacified the lid. There can be no doubt when viewing the video that this standard process produced regular exposures to airborne daughter products that were deposited on the lid.

No PAMs were used in the late 1970s and early 1980s. In the mid 1980s the house vacuum lines were rigged with a nipple to attach a PAM. I do not know if these results are available.

Crucibles were put in 55 gallon drums beginning about 1983 and stored in E building for a minimum of 6 weeks after it was found that high radiation counts from daughter products were a problem. Prior to that time we reused crucibles as quickly as they could be cleaned and prepped.

Furnaces had to be rebuilt on a regular basis due to quartz cracking, copper coolant plates warping, etc. When we would do this, it took as long as one week to complete. Initially this was done without using PAMs or respirators. This was the worst job in the place as it took several hours a day of working in a confined space, breaking up to remove old insulating bricks to put them in a 55 gallon drum, only to later remove the reusable bricks. This was a dirty and hot job that had many opportunities for airborne exposures of radioactive contaminated dust.

When the NRC came for inspections, we would shut down the foundry for several days prior to the visit and clean everything with a toothbrush. Everything had to be thoroughly cleaned in advance of these visits. We asked why we only did this prior to inspections and were told, "You clean your house before your grandmother visits, don't you?"

Crucible burnout started out as a simple oven with no vent. You would crack the door open to cool things off after the DU burned and turned to oxide. You then vacuumed out the debris.

Around 1982 the area was surrounded by concrete blocks to reduce radiation exposures, but it was not enough. Finally, we retained a company to design and build a special oven for this purpose. This included a tilting mechanism and mechanical brushing step to clean the inside of the crucible. However, there was so much radiation exposure that the box had to be lined with lead. It never worked well and was ultimately abandoned for a return of the manual processing method with a wire brush for cleaning and brushes to apply mold wash.

We used to sit and stand on wooden benches on the melt towers. We also sat the furnace head plates on these seats. One time a radiation tech checked the radiation level. It was so high that the Geiger counter was off scale. These were the same seats we would regularly sit on. Every so often they would come by and check a chair and have us throw it out because the count was too high.

They also would do this for our shoes. When leather palm gloves were also found to be a problem around 1983, they were also checked regularly. Prior to that time, glove contamination wasn't known to be a problem.

In the early 1980s, the news media visited the plant. Will Tuffin (the President) came down to to let us know we were free to speak with them. We all passed. But the reason for the media visit was due to high employee exposures to radiation. Someone had called the news media and NRC when they got upset over the poor H&S standards. This happened on several occasions.

We told to check the personnel records to look at how many people transferred into versus out of the foundry. Shortly after we all got a $1.25 per hour raise. claimed the raise wasn't shut up money but to bring us up the national average for workers. Nothing was ever fixed regarding our H&S concerns.

UF4 Reduction Area

The reduction of UF4 to uranium metal was started around 1978-79 in Building D. I briefly transferred to this area thinking it would be a good career move. I later found out that the process would be ultimately moved to South Carolina. After about a year I transferred back to .

There were many operations in this area that produced high levels of airborne contamination. It is unlikely that these operations were adequately monitored. The use of area PAMs was limited and not located where many of the problems occurred.

The shake out station was a conical fixture made from 1" square welded piping. We would turn the vessel upside down over a hole in the floor to catch debris. A quick release was used with on overhead crane to drop the vessel into the hole. The vessel would drop about 4 feet. It would jar out the uranium derby. Sometimes this had to be done several times or use a sledge hammer assist. On weekends we would go into the hole with a 55 gal drum and a shovel to collect the debris. Later on, this hole became the water quench tank for a heat treat furnace.

After the derby was removed, you had to chisel off the mag fluoride crust. This salt would cling to pockets in the derby surface. In most cases the vented chisel station was awkward to use. Techs would pull the derby out of that area to get better access for swinging the hammer and chisel. I'm pretty sure this resulted in many airborne exposures that should not have been permitted.

After we switched to magnesium fluoride (MgF2) as the liner material and got rid of graphite, we used two-piece graphite for the area where the derby formed and MgF2 for the upper liner material. We packed the MgF2 using a 3 lb sledge and packing rods. This was recycled MGF2 that was contaminated from prior reductions. We also would pack MgF2 on top of the green salt.

We had several burn outs that would burn through the steel liner. Flame and smoke would blow out the flange in the top of the furnace that resembled a rocket exhaust coming out of a missile silo. We would evacuate the area until the smoke cleared but would get exposed to airborne contaminants. Area PAMs were not always well positioned to record exposures.

You never had keys or pens in your pockets because the extracted vessels were so hot that they would heat the keys and burn you. It's funny how you don't forget certain things.

I also remember the green sweeping material that was used to cover up the green salt and used to sweep it up. Many times the sweeping action would resuspend the dust.

After vessels came out of the charge station where they were loaded with UF4 and Magnesium chips, they might catch the cement lip, tilt and fall, and spill out their contents.

This created a big cloud of UF4 dust. As a result all work surfaces were coated in green dust.

The charge station was vented but the mechanism would stick and overfill the vessel, and pour out the sides. You used a vacuum hose to suck up the green salt. This would occasionally overburden the HEPA filters and they would crap out. This would also produce a problem for the CNC lathes that were also vented by the same vent system. We also had frequent brown outs and power failures that caused vents to stop. We had emergency procedures to shut off vacuum lines on the foundry furnaces to prevent total vacuum failure. Another option was to back fill the furnaces with Argon. We were lucky no one ever lost their life. There were also the frequent vent stoppages due to broken drive belts.

Ring badges were not worn in the UF4 area.

These are some of my recollections. It is quite clear as I think of this time period that there were many times we were exposed to severe airborne contamination that went unmonitored. Unfortunately, HP techs were viewed as the enemy since they slowed us down. We would then have to make up the time lost after they would leave. This was the constant tug of war between management pressure to meet production goals and occasional HP presence that slowed processing down. As a result, HP techs were not present very often.

In addition, people did not want to lose their overtime so they did some things to avoid getting bumped from the work area that may not have been very smart. I'll leave these and other stories for an opportunity to be interviewed in the future.

Signed this day of , 2011

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Introduction

I, , residing at provide this affidavit to describe specific and unmonitored radioactive material exposures that occurred during my employment between <insert date> and <insert date> at the Nuclear Metals, Inc. West Concord manufacturing facility.

Please describe activities where access to process area was unrestricted.

Describe any processes where you can recall fires as these were unexpected events where it was unlikely they were reported to the NRC or where it was unlikely to have been monitored for airborne contamination.

Describe any processes, like the UF4 reduction in building D, where you may recall seeing green salt contamination on the floor and process equipment.

Describe the traffic of contaminated carts that carried material between process area during this time.

Try to recall the year in which these events or processes occurred.

Include the names of any employees who may have been in the area at the time.

Do you recall being able to eat, smoke or drink in any of the process areas?

Do you recall the break time gatherings in Art Dodge's chem.lab between 1970 and 1983 where folks would drink and smoke?

Signed this day of , 2011

AFFIDAVIT

DESCRIBING UNMONITORED EXPOSURES OF URANIUM

AT

NUCLEARMETALS, INC., WEST CONCORD, MASSACHUSETTS

I, , residing in , provide this affidavit to describe my experience and recollections of un-monitored radiation physical exposures that occurred during my time of employment. I was employed at this facility and the Acton facility from 1972 to 1986.

During the period from 1972 until 1975/1976, I worked on the

During this time I worked mainly on . During this time controls, monitoring and reporting were lax. After 1976, I and had less direct involvement of .

Workers were allowed to eat at their workstations, go without monitoring to the cafeteria, or to the office areas. I fortunately have not been diagnosed with any cancers.

There were several occurrences in which depleted uranium became airborne or were otherwise spread to areas of the facility. Namely among these were frequent uranium fires associated with the handling and disposal of machine turnings or grinding residue. To my knowledge these were not monitored with air samplers, nor reported with cause, effect and required actions.

In the early 1980,s Nuclear Metals began the process of reducing UF4 (green salt) to depleted uranium metal. Green salt is a powder and is blended with magnesium chips, heated, reacting to produce the metal. While blending, drums of the green salt were emptied into a powder blender. Some of the powder leaked or spilled, some airborne and some spilled on the floor and tracked around. Again there was little monitoring of the process.. This work was subsequently transferred to Carolina Metals in Barnwell, SC in1983.

I am willing to be interviewed if further details are needed.

Signed this day of , 2011

Notarized by:

AFFIDAVIT

DESCRIBING UNMONITORED AIRBORN EXPOSURES OF URANIUM AT NUCLEAR METALS, INC., WEST CONCORD, MASSACHUSETTS

I, , residing at
provide this affidavit to describe discrete and unmonitored radiation exposures that occurred between 1970 and 1983 at the Nuclear Metals, Inc. West Concord manufacturing facility. I was employed at this facility primarily as a between the years 1970 and 1990.

I recall that during this time period contamination controls at the plant were very poor. Eating lunch at the extrusion press was commonplace.

I the early 1970s I where eating smoking and drinking was permitted. Access to the and was unrestricted. I am unaware of any attempts to decontaminate the enriched uranium sludge accumulation areas of these polishing wheels. We had 3-4 fires per year in Building A from dried out residues on m wheels, the same wheels previously used to polish enriched uranium samples and Beryllium. These fires consisted of flashes and flame of finely divided uranium residues.

When these polishing wheels were allowed to dry out the residues became pyrophoric. Anyone could access and use these wheels so when they turned them on but failed to turn on the water, the sparks would ignite fires. These fires were not reported or monitored for airborne contamination.

There was a hopper at the UF_4 reduction area in Building D that was used to load the UF_4 from 55-gallon drums. I recall that this was not a sealed process and when the UF_4 would suddenly let go and drop into the hopper a cloud of UF_4 dust was created. This resulted in a fine deposit of green dust over the entire process area. Since Building D was opened around 1979, I believe this reduction processing occurred in the 1979 – 1982 time frame. Eventually the process was transferred to CMI in Barnwell, SC.

No change of clothes was needed to enter exit the buildings and manufacturing areas.

Anyone could go anywhere and went anywhere within the plant confines.

I am willing to be interviewed if further details are needed. I am aware of many other hazardous occurrences that were never monitored or reported.

Signed this day of , 2011

Notarized by: