

November 15, 2006

MEMORANDUM FOR:

██████████

FROM:

██████████ (signed)

SUBJECT:

Final ██████████ Incinerator
Incident

Distribution:

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SUMMARY: A long term, experienced employee was injured while working at the ██████████ remote research field station in Alaska on Thursday, September 28th at approximately 12:45 pm while loading an operating incinerator. He had been feeding wood debris and bagged garbage into the incinerator for more than an hour when he noticed an aerosol can inside. Almost immediately there was a significant explosion, and something hit the employee in the face causing significant injury. The employee could not see, so he made his way to the nearby shop where he used eye wash bottles to clear his face. He then called his coworker on his cell phone to request assistance. In the meantime, the coworker had heard the loud explosion and had come to the incinerator to investigate. Initially he did not see the injured employee and could not determine the cause of the explosion. Within a couple of minutes the coworker found the injured employee in the shop. He considered the injuries to be very severe and he administered 1st aid at the scene, and then helped the injured employee to his residence, ██████████ ██████████, where his ██████████ continued 1st aid. The employee had deep facial cuts above and below his right eye, cuts to the bridge of his nose, and obvious damage to his right eye.

Supervisory personnel in Juneau were immediately notified, and emergency evacuation of the injured employee was requested. The weather at the time of the incident was very bad, with rain and low clouds. ██████████ is located in a very remote area ██████████ in Southeast Alaska. It is not accessible by road. The only access is by small float plane. Emergency medical evacuation was immediately requested. However, it took more than 4 hours for a small plane to make it in, followed by at least another 1 1/2 hour flight to Juneau to get initial hospital medical care. The hospital in Juneau determined that the employee's eye injury required more advanced medical treatment than is available in Juneau, so another medical evacuation flight was ordered by the hospital to transport the patient to Seattle. He arrived at Harborview hospital in Seattle in the early morning hours of Friday, September 29th, and emergency surgery was performed on his severely damaged right eye Friday afternoon.

The employee was released from Harborview on Saturday, September 30th, with referral orders to go to an Ophthalmologist at the University of Washington Medical Center on

Monday, October 2, for further evaluation and treatment. Additional surgery is scheduled at UW Medical Center on Tuesday, October 10, 2006. The employee's supervisor has prepared the CA-1 and CD-137 on the employee's behalf. He has been under constant medical care, and transportation since the incident, and his vision is compromised so he could not prepare the form himself. A copy of the initial CD-137 "Report of Injury, Illness, Accident or Fatality" is attached for reference. All medical care and transportation provided so far has been of an emergency nature. The long term prognosis for recovery is not yet known.

INTERIM FINDINGS:

Primary Factor: The employee inadvertently put an aerosol can into the operating incinerator with the door open. The can exploded with such force that it exited the incinerator and struck the operator in the face, causing severe eye injury.

Contributing Factors:

Policy - Due to the limited land area, and the need to eliminate bear attractions, all waste generated at the site must be incinerated and the ash collected and transported to Juneau for proper disposal. There has been no policy or procedure to limit items to be incinerated.

Age of Equipment - The existing oil fired incinerator is more than 20 years old. Because it has been in continuous use and exposed to the weather for the entire period, any automatic control features it may have had are no longer functioning. Therefore, the incinerator requires constant monitoring and manual adjustment throughout its burn cycle. A project request to replace the old incinerator has been in place for several years to NOAA. Funding was approved this year by NMFS to purchase a new, modern incinerator and the project was obligated in September, with the expected arrival date to be in the spring of 2007. The new incinerator will be installed as soon as possible.

Difficulty in communication - While [REDACTED] is a small site, there is no easy way for employees to communicate emergency situations to each other. In this case, the employee's cell phone was a potential life saving device. When working alone, employees need to communicate frequently on the status of their duties and their location.

Weather - The weather in [REDACTED] and Juneau at the time of the incident was very bad resulting in marginal flying conditions. Although this caused several hours delay, an experienced pilot was able to get in to [REDACTED] and med-evac the employee and his family to Juneau where he received professional medical attention.

Positive Factors:

[REDACTED] responded appropriately to the emergency, providing 1st aid to the injured employee, notifying supervisory personnel in Juneau immediately, and securing the incident scene to ensure it was safe. [REDACTED] was also instrumental in getting an emergency medical evacuation flight into [REDACTED] as soon as possible.

The area, particularly the shop area, had considerable blood remaining on surfaces. The blood was properly cleaned up using soap and water, and the area was decontaminated using bleach solution, following blood borne pathogens training.

Supervisory personnel in Juneau provided immediate oversight and tracking of the emergency response. They also worked to ensure that the incident reporting was properly handled and that the initial accident investigation was properly done. They looked for means to ensure that a similar incident does not reoccur, and they made positive corrective action recommendations.

At every level, employees acted promptly and professionally to help the injured employee and his family through the emergency, to meet the required reporting requirements, and to make certain there is no reoccurrence of the incident.

Recommendations:

Although the operational procedures followed in the freakish incinerator accident were no different than those practiced and in effect over the past 25 years, it is clearly evident that changes are necessary to prevent a similar incident in the future. Therefore, the following corrective actions and policy changes were put into effect as of September 29, 2006.

1. No small aerosol cans or containers (detergents, paint, insecticides, shaving cream, or other items packaged under pressure with a gaseous propellant for release as an aerosol) will henceforth be placed in the incinerator. These items will be returned for disposition in the Juneau landfill.
2. Operation of the incinerator will now require that the main door to the unit will be secured and not be opened after a burning cycle until the unit has completely cooled down.
3. Management will seek to install a hydraulic or manual device to puncture and relieve pressure from aerosol cans, and to collect remaining contents for proper disposal.
4. We will make every effort to install the new incinerator as soon as possible.
5. Additional two way communications will be established on site with frequent check in requirements for employees.

FINAL DISPOSITION:

All investigations of the incident have been completed. The interim measures implemented have been successful in controlling the aerosol container rupture hazards at the incinerator. The controls shall remain in place until the new incinerator is installed and accepted. At that time these controls shall be re-evaluated and those that make sense in light of the new equipment shall remain in place thereafter.

The employee will continue to receive assistance from the management of NMFS, and especially the [REDACTED] Science Center until he can fully return to work. The employee's progress will be monitored. The employee has returned to a temporary light duty position until he recovers from his injuries. His prognosis changes slightly over time but overall remains good. Additional surgeries will be required.

The investigation of this incident is closed.

Attachments:

1. CD-137 / CA-16 (Copy)

2. Coworker's written statement

Attachment 1: CD 137 / CA-16 Attachment 1: CD 137 / CA-16 Attachment 1: CD 137 / CA-16

Attachment 2 – Co-workers Statement

[REDACTED] 28 September 2006

At approximately 12:45, I [REDACTED] heard a loud explosion (louder than a gun blast) emanating from the incinerator/warehouse area. I knew [REDACTED], was burning garbage that day and I feared that the incinerator had exploded and that there could potentially be injuries and/or a fire. I dressed as quickly as possible and ran to the scene where, from a safe distance, I observed the incinerator door open with a substantial fire burning inside and nobody in the immediate vicinity. After a minute of observation without any further incident, I approached the incinerator and closed the door. I briefly studied the ground in front of the incinerator but did not find any clues as to what caused the explosion. Without seeing any physical clues or anyone nearby, I incorrectly surmised that the force of a blast from an explosion inside the incinerator had caused the door to open. As I was turning to go to the [REDACTED] and telephone [REDACTED] at the [REDACTED] (where I presumed him to be) to discuss the explosion, I heard [REDACTED] call out from the shop that something was wrong and that he needed help.

After the explosion, [REDACTED] had went to the shop and telephoned [REDACTED] looking for me. [REDACTED] told [REDACTED] that he was injured and needed help. [REDACTED] informed him that I had gone to the incinerator to inspect the scene. [REDACTED] then called [REDACTED] at the [REDACTED] and [REDACTED] and [REDACTED] at the [REDACTED] to inform them of the accident. After learning that I was at the incinerator, [REDACTED] left the shop and called out to me for help. [REDACTED] and I returned to the shop where I noticed blood on the floor from the entryway to the eye wash station. [REDACTED] had several blood soaked paper towels covering his right eye and nose. He also had melted plastic adhered to the skin under his nose. I looked at [REDACTED] injuries to determine what damage had occurred. When he removed the paper towel I observed multiple horizontal cuts on the bridge of his nose, a cut on his lower eyelid, a cut on his upper eyelid near his nose and that his eye was bloody throughout the sclera but particularly bloody at the cornea. I could not determine whether his eye was cut or if it had just received blunt trauma. [REDACTED] informed me that he could not see out of the eye and we immediately began discussing plans to get him to a hospital. Flying conditions were poor. It was raining, the cloud ceiling was quite low (600-900 feet) and there were moderate southerly winds. I had [REDACTED] take a seat in the shop and I went to get a phone book and some ice packs from the [REDACTED] As I was

calling Sitka-based floatplane service Harris Air and Juneau-based Tal Air, [REDACTED] arrived at the shop and began assembling first aid supplies. Harris Air informed me that they were not flying due to weather conditions and I was only able to leave a message with Tal Air. When I returned to the shop I had [REDACTED] apply ice to his eye and nose. I then telephoned Bartlett Hospital in Juneau and informed the emergency room of Brad's condition and the need for a medical evacuation.

I believe the surgeon on call was Dr. [REDACTED]. We discussed [REDACTED] injuries and she agreed that he needed medical assistance as soon as possible. She was then to arrange for medical evacuation but informed us that weather in Juneau was also poor for flying. Meanwhile [REDACTED] called Dr. [REDACTED], a friend of the [REDACTED] and also a Juneau emergency room doctor. She informed him of [REDACTED] injury and he apparently contacted Dr. [REDACTED] and they began to work on the evacuation. At about 1300, [REDACTED] was escorted to the [REDACTED] and was asked to lie down and relax. He kept ice on his eye and was able to apply some direct pressure to his nose with paper towels. Dr. [REDACTED] called and told us that Tal Air had been contacted and would attempt to arrive at [REDACTED] around 1530. In case the Tal Air floatplane would not be able to make it to [REDACTED], I called the Coast Guard Command Center in Juneau and informed them of the situation so that they would be able to respond with a helicopter if necessary. I also placed a call to [REDACTED], [REDACTED] Station Manager, to inform him of the situation.

Subsequently, Jay Kennedy, Alaska Fisheries Science Center Safety Officer, called and he and I discussed details of the accident. While waiting for the floatplane to arrive I applied a bandage to [REDACTED] nose and tried to protect his eye by loosely wrapping gauze around his head and over his right eye. I was able to debrief [REDACTED] at this time about what had occurred and to find out if the incinerator had malfunctioned. He told me that nothing had malfunctioned and that he was doing what was standard practice. He was loading garbage into the incinerator, which had been burning for a few hours. He opened the incinerator and threw a few bags of garbage in and went to get a few more bags. When he returned to the incinerator he saw an aerosol can of "Pam" cooking spray in the flames and then the explosion occurred. He thought that he was not wearing glasses at the time but apparently he was wearing his prescription glasses. I found the majority of them in front of the incinerator. The right lens was broken in more than three pieces, both nose pads were missing and the right earpiece was missing. I later found the earpiece on the floor in the shop.

The floatplane arrived with Pilot [REDACTED] around 1545. [REDACTED] was escorted to the plane and he, [REDACTED] and [REDACTED] left for Juneau. I called the Coast Guard to inform them that a helicopter evacuation would not be necessary. I let the incinerator run until about 1700 when I shut it down and allowed it to cool. [REDACTED] mopped up blood from the shop then sterilized the floor with a bleach water solution.

[REDACTED]
Research Fishery Biologist
[REDACTED] Science Center
NOAA Fisheries