

| 2018 National Trainers Exchange | | |
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| Lesson Plan: Job Hazard Analysis – Using FACE Reports in the classroom | | Time: 90 min |
| Objectives: | | |
| <ul style="list-style-type: none"> • Discuss JHA’s and methods of introducing the concept • Explain the NIOSH FACE (National Institute of Occupational Safety and Health, Fatality Assessment and Control Evaluation) reporting system • Identify opportunities where FACE reports can effectively show the importance of the JHA process | | |
| Time | Activity | Materials |
| | Introduction | |
| | <p>Job Hazard Analysis</p> <p>Ask participants about their experiences and methods for introducing the JHA process in the classroom setting.</p> <ul style="list-style-type: none"> • What type of class were they presenting • What was the instructional level • How did the students respond | OSHA 3071 |
| | <p>NIOSH FACE Program</p> <p>Ask participants if they are familiar with the FACE program. Review NIOSH FACE program</p> <ul style="list-style-type: none"> • What is FACE? 2 programs – <i>NIOSH and State FACE</i> • What are the primary activities of FACE? <i>Surveillance, Investigation, Recommendation, Prevention</i> • How is FACE data utilized – <i>Reports in NIOSH data base available on internet</i> | FACE hand out |
| Time | Activity | Materials |
| | How FACE reports can aid in introducing the JHA concept | |

| | <p>Explain that there are two specific issues involved with conducting JHA's :</p> <ul style="list-style-type: none"> • Hazard identification: <ul style="list-style-type: none"> ○ Chemical. ○ Physical ○ Biological ○ Safety • Risk Assessment: <ul style="list-style-type: none"> ○ Frequency ○ Probability ○ Severity <p>• http://www.osha.gov/publication/osha3071.pdf</p> | |
|-------------|---|--|
| | <p>Steps for Developing a Job Hazard Analysis</p> <ul style="list-style-type: none"> • Involve employees • Review accident/near miss history • Perform JHA • Identify hazards • Risk assessment • Prioritize • Determine Control measures | |
| Time | Activity | Materials |
| | <p>Activity - Small groups</p> <ul style="list-style-type: none"> • Break participants into small groups • Hand out hazard scenario – one per group • Each group analyze scenario and develop a quick JHA – using blank form • Groups report back – Hazard ID, Risk assessment, Control measures, resources • Hand out FACE report – review findings and compare to group findings | <p>Hazard scenarios Blank JHA FACE reports</p> |
| | <p>Summary</p> <ul style="list-style-type: none"> • Discuss ideas for using FACE reports • Discuss other resources available: • Chemical Safety Board – http://www.csb.gov • NIOSH-http://www.cdc.gov/NIOSH-FACE • CalFACE- http://www.cdph.ca.gov/programs/CCDPMP/DEODC/OHB/FACE | |

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California Department of Public Health ,
Occupational Health Branch ,

**FATALITY ASSESSMENT AND CONTROL EVALUATION ,
PROGRAM (CA/FACE) ,**

**Lake Maintenance Worker Drowns while Removing
Weeds from a Golf Course Lake ,
Case Report: 15CA001 ,**

SUMMARY

A lake maintenance worker drowned after falling from a row boat while clearing vegetation (weeds) from a golf course lake. The victim worked for a lake management company. The victim was “corralling¹” aquatic weeds by dragging a rope out into the lake, and circling the weeds while standing up in a 10-foot aluminum, non-motorized fishing boat. The movement in the boat caused it to capsize, throwing the victim into the water. The victim was recovered from the bottom of the lake six hours later by the sheriff’s dive team. The victim was working alone in the boat, was not wearing a personal floatation device (PFD) and did not have proper training in hazard recognition or water safety. The California Fatality Assessment Control Evaluation (CA/FACE) program investigator concluded that, to help prevent similar incidents from occurring in the future, employers should:

- Provide personal floatation devices (PFDs) and ensure that workers wear them when working on water.
- Develop and implement a comprehensive, written Injury and Illness Prevention Program (IIPP) that includes training in hazard recognition and the avoidance of unsafe conditions when working on water and using small watercraft.
- Have two people on the boat when doing work on water.
- Have life rings with ropes adequate in length to rescue workers who fall into the water or overboard.
- Provide proper equipment for operating small, non-motorized watercraft.
- Consider implementing an integrated pest management (IPM) program for controlling weed growth in lakes that includes a combination of mechanical, operational, biological and chemical (herbicide) techniques, thus reducing the need for working from boats.

¹ Coralling is an in-lake management method used for gathering floating weeds and moving them to the shoreline for disposal.

INTRODUCTION

On Tuesday, September 16, 2014, at approximately 1:45 pm, a 45-year-old male Hispanic lake maintenance worker drowned after falling from a boat while clearing vegetation from a golf course lake. On September 26, 2014, CA/FACE learned of the fatality through media reports. The CA/FACE investigator conducted an onsite investigation on December 17, 2014. During the site visit the CA/FACE investigator met with the employer, interviewed five witnesses, took photographs and observed the lake where the fatality occurred. The sheriff's report and coroner's report were also obtained.

EMPLOYER

The victim's employer was a lake management company that primarily services golf course lakes and some homeowner associations (HOAs). The company had been in business since 2008, and had eight employees. The company maintained golf course lakes by keeping them free of rubbish, algae and aquatic plants (macrophytes).² At the time of the incident, the company was responsible for managing seven golf course lakes comprising over 300 surface acres of water. The company equipment and office were housed onsite at a large golf course complex.

WRITTEN SAFETY PROGRAMS AND TRAINING

The employer did not have an IIPP. Employees received safety training through weekly tailgate safety meetings and while on-the-job. According to the employees, these meetings did not include water safety training. At the time of the CA/FACE interviews, the employees had not been given training on water safety. The tailgate safety meetings were given in Spanish by the operations superintendent.

New employees did not go out in the boat until they gained experience with the other aspects of in-lake weed removal. There was no training provided on small craft safety. According to the

² Macrophytes (henceforth referred to as lake weeds) consist of rooted and non-rooted floating plants (e.g. duckweed, water hyacinth), submerged plants which are rooted to the bottom (e.g. hydrilla, Eurasian watermilfoil) and emergent plants which are rooted along the shoreline, such as cattails. A variety of control methods exist for aquatic vegetation. These include the use of mechanical, operational, biological and chemical (herbicide) tools. Mechanical methods include using harvesters or circulating pumps, corralling non-rooted plants and pulling them to the shore for removal, and cutting the roots of floating rooted plants and pulling them to the shore for removal. Biological techniques include the introduction of bacteria capable of using nutrients otherwise used by plants or degrading organic material. Operational tools include buffer strips to lessen fertilizer movement into the lake, and nutrient sequestration and dyes that limit resources to aquatic plants to lessen their vigor and rate of growth. Herbicide selection and use is plant-dependent and typically results in plant decomposition in the water.

employer, employees never worked alone around the water, and they were never trained to do so by the employer.

THE VICTIM

The victim was a 45-year-old Hispanic male lake maintenance worker who had been working for the owner for ten years, the first two years at another lake management company. His primary language was Spanish and he had a 6th grade education. He had lived in the United States for 14 years. His typical duties included application of lake related chemicals (e.g. herbicides, copper sulfate), trimming and removal of lake weeds, algae and dead fish, and cleaning basket filters.

INCIDENT SCENE

The incident scene was a 4.5-acre golf course lake (Exhibits 1 & 2). The lake served as an irrigation basin, receiving run-off water from an adjacent canal. Water from this lake flowed out through a pipe to another water feature on the course. Overgrowth of lake weeds and algae peak during the summer months. The lake was reportedly thick with weeds at the time of the incident.



Exhibits 1 & 2: View of lake where the fatality occurred (landscape view not to scale; photo taken when lake was free of vegetation).

WEATHER

The day was clear and warm, with a temperature of 101°F at the time of the incident; relative humidity was 33%, and winds were from the southeast at 11.5 miles per hour.

EQUIPMENT

On the day of the incident the victim was using the following equipment:

- 10-foot, square-nose, flat-bottom aluminum boat (Exhibit 3)
- Poled net, used as an oar (Exhibit 4)
- Rope to surround weeds



Exhibit 3. Boat used by victim



Exhibit 4. Poled net used for paddling the boat

INVESTIGATION

On the day of the incident, the victim was working from a small boat while “corralling” weeds from a golf course lake maintained by the victim’s employer. Corralling is an in-lake management method used for gathering floating weeds and moving them to the shoreline for disposal (Exhibit 5). During this procedure, a rope is attached to the boat and secured to the shore; the person in the boat takes the line out and surrounds the weeds in a large circular pattern and returns to shore. According to coworkers, the rope is allowed to sink to the bottom, at which time the workers onshore pull the rope, extracting (culling) the underwater weeds, and bringing them closer to the shoreline where they can then be raked onto the shore for disposal.

On the day of the incident, the victim started work at 5:30 am. Throughout the day, the victim had made multiple passes in the boat, corralling in the weeds. At roughly 1:45 pm, the victim set out alone in the row boat to make one last pass at corralling the lake weeds before ending the work day. Five co-workers, who were all relatives of the victim, remained onshore to help with the removal and disposal of the weeds. The victim was paddling the boat from a standing position, using the poled net that is pictured above (Exhibit 4). He was about 90 feet offshore when the boat overturned, causing him to fall into the water. The onshore workers saw the

victim struggling in the water and one worker swam across the lake in an attempt to rescue the victim. When he reached the boat he saw the victim sinking; he pushed the boat toward the victim, but he was already underwater. The witness remarked that the dense vegetation made it difficult to move through the water and the water felt very heavy. Additionally, it was the end of a very hot work day and the witnesses reported being tired. Another worker entered the water and made it to the boat; two others then entered the water and made it halfway to the boat, threw a line to the two workers and pulled them and the boat back to shore. After approximately 10 minutes of searching/trying to rescue the victim, the workers called 911 for help.

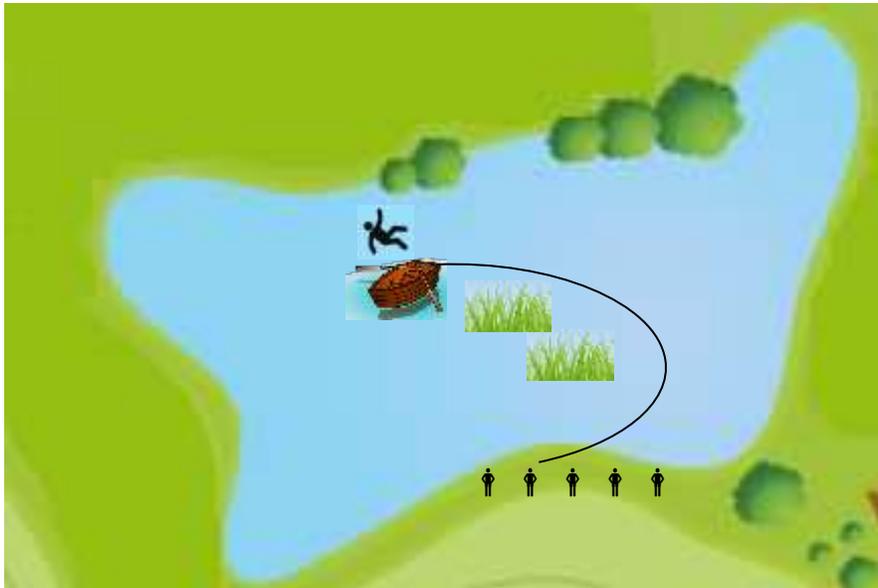


Exhibit 5. Graphic depiction of corraling activity leading up to the fatal incident (not to scale).

Emergency medical service personnel arrived at the scene but could not locate the victim due to a lack of visibility in the lake and dense weed growth. The sheriff's dive team was dispatched and they recovered the victim at 8:03 PM. The water temperature was 88°F at the time the victim was recovered. The victim was found underwater, tangled in the weeds at a depth of 8 feet.

The victim was not wearing a PFD and there was no rescue equipment in the boat or onshore. Witnesses reported that the square-nosed boat that was being used that day may have contributed to the instability of the craft, leading up to the boat capsizing and the victim falling into the water. The boat involved in the incident was being used temporarily while their other boat was being repaired. The square-nose and shallow-hull design allows weeds to build up in front of the boat, impeding movement and requiring the boat operator to clear the weeds from the front of the boat, often from a standing position. Shifting one's weight in such a manner changes the center of gravity, decreasing stability. It was reported that the victim may have been clearing weeds from the boat's path when it overturned. There is inconsistent information as to whether the victim knew how to swim. During the CA/FACE interviews, the employer and

witnesses reported that the victim knew how to swim. In contrast, information provided to the Sheriff's Department on the day of the incident indicated that the victim did not know how to swim.

CONTRIBUTING FACTORS

Occupational injuries and fatalities are often the result of one or more contributing factors or key events in a larger sequence of events that ultimately result in an injury or fatality. The CA/FACE team identified the following contributing factors in this incident that ultimately led to the fatality:

- Dense aquatic weeds
- Lack of safety equipment
- Lack of hazard recognition and training
- Lack of swimming ability
- Improper paddling equipment
- Hot weather conditions and worker fatigue
- No buddy system (two workers) on boat

CAUSE OF DEATH

The cause of death according to the death certificate was drowning.

RECOMMENDATIONS

Employers with employees who regularly perform work in and around water should:

Recommendation #1: Provide PFDs and ensure that workers wear them when working on or near water.

Discussion: The victim was not provided with a PFD and did not wear one when he was working in the boat. The victim stood in the boat, maneuvered with a long pole and reached for the weeds. These activities pose a risk of capsizing the boat and falling overboard into the water. A U.S. Coast Guard-approved PFD (Type I, Type II, Type III) should be worn whenever employees are working on or near water where the danger of drowning exists (see Title 8: <http://www.dir.ca.gov/title8/3389.html>). In this incident, if the victim had been wearing an approved PFD, he may have remained buoyant for rescue and the drowning prevented.

Recommendation #2: Develop and implement a comprehensive written IIPP that includes training in hazard recognition and the avoidance of unsafe conditions when working on water and using small watercraft.

Discussion: In this incident, the victim was assigned the task of cleaning weeds from a lake by working in a boat relatively far from shore. He fell into the water, probably became tangled in the weeds, and drowned within minutes as rescuers were too far from shore. The employer did not have an IIPP that addressed water safety, and the victim had no specific training to work on the water safely. Employers should evaluate all tasks performed by workers, identify all potential hazards, then develop and implement a written safety program addressing these hazards. Training should be provided to employees about the hazards and safe work practices that apply to the work they are expected to perform. Training in recognizing and avoiding the potential hazards should be given to all workers. Employers should assess the competence of workers in their ability to swim and in recognizing hazards and using safe work practices around water, and should consider designating and providing training to a person competent in water safety and rescue (such as the American Red Cross basic water safety training). Additionally, training on the recognition and management of heat-related illness should be included when employees are likely to work in hot environments. If an appropriate hazard assessment had been done prior to removing the weeds in the lake, steps would have been taken to ensure the safety of the victim and prevented his death.

Recommendation #3: Have two people on the boat when doing work on water.

Discussion: The victim was alone in the boat and maneuvering in a standing position with a poled net to surround the weeds. In so doing, the boat probably became unstable and capsized. Whenever possible, work should be done from a sitting position. Having two persons in the boat when corralling weeds will help distribute the load more evenly, reducing the potential for capsizing. In addition, having a “buddy system” on the boat adds another level of safety in the event someone falls into the water, as a life ring can quickly be thrown to the person overboard.

Recommendation #4: Have life rings readily available for workers who work on or near water.

Discussion: When the victim fell onto the water, no life ring was provided by the employer or available at the time of the incident. The victim did not have any life ring to support his weight and prevent him from submerging under the water. A U.S. Coast Guard-approved, 30-inch life ring, with an attached line of at least 90 feet and 600-pound capacity, should be provided and accessible where the employees’ work exposes them to the hazard of drowning (see Title 8: <http://www.dir.ca.gov/title8/3389.html>). Had a life ring been available to throw from the boat or from the shore, the victim’s head might have remained above the water and the drowning prevented.

Recommendation #5: Provide proper equipment for navigating small non-motorized watercraft.

Discussion: The victim was using a long pole with a net (skimmer) as a means for propelling the boat through the water. This pole and/or the rope used to corral the weeds may have become caught on weeds, or contributed to the instability of the boat, causing it to capsize. Employers should provide proper equipment for navigating non-motorized watercraft. Using proper equipment, such as strong and adequately sized paddles or oars, helps with controlling and navigating small watercraft safely.

Recommendation #6: Consider implementing an integrated pest management (IPM) program for controlling weed growth in lakes that includes a combination of mechanical, operational, biological and chemical (herbicide) techniques, thus reducing the need for working from boats.

Discussion: The employer in this incident frequently used manual methods to control weeds in the golf course lake. This entailed deploying employees in small watercraft to capture the weeds and pull them in. The inherent nature of this method creates a risk of water entry by employees. Employers should consider using alternative methods to control lake weeds such as those described in Footnote 1 (see Biology and Control of Aquatic Plants: <http://www.aquatics.org/bmp.html>). If these alternatives had been used in this incident, the victim would not have been out in a boat at risk of entering the water and drowning.

REFERENCES

Division of Occupational Safety and Health. Title 8 regulations, Subchapter 7 - General Industry Safety Orders. Group 2 - Safe Practices and Personal Protection. Article 10. Personal Safety Devices and Safeguards, § 3389 Life Rings and Personal Flotation Devices. California Department of Industrial Relations: <http://www.dir.ca.gov/title8/3389.html>;
§3395. Heat Illness Prevention. California Department of Industrial Relations: <http://www.dir.ca.gov/title8/3395.html>

Division of Occupational Safety and Health. Injury Illness and Prevention Program (IIPP). California Department of Industrial Relations: <http://www.dir.ca.gov/dosh/etools/09-031/index.htm>

California Invasive Plan Council. Aquatic Plants of the State of California: <http://www.cal-ipc.org/landscaping/dpp/plantpage.php?region=state&type=Aquatic%20plants>.

Aquatic Ecosystem Restoration Foundation. Biology and Control of Aquatic Plants: <http://www.aquatics.org/bmp.html>

American Red Cross Swimming and Water Safety Courses: <http://www.redcross.org/take-a-class/program-highlights/swimming>

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August 10, 2015

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FATALITY ASSESSMENT AND CONTROL EVALUATION PROGRAM

The California Department of Public Health, in cooperation with the Public Health Institute and the National Institute for Occupational Safety and Health (NIOSH), conducts investigations of work-related fatalities. The goal of the CA/FACE program is to prevent fatal work injuries. CA/FACE aims to achieve this goal by studying the work environment, the worker, the task the worker was performing, the tools the worker was using, the energy exchange resulting in fatal injury, and the role of management in controlling how these factors interact. NIOSH-funded, state-based FACE programs include: California, Iowa, Kentucky, Massachusetts, Michigan, New Jersey, New York, Oregon, and Washington.

Additional information regarding the CA/FACE program is available from:

**California FACE Program ,
California Department of Public Health ,
Occupational Health Branch ,
850 Marina Bay Parkway, Building P, Third Floor ,
Richmond, CA 94804 ,
<http://www.cdph.ca.gov/programs/ohb-face> ,**

INSTRUCTIONS FOR COMPLETING JOB HAZARD ANALYSIS FORM

Job Hazard Analysis (JHA) is an important accident prevention tool that works by finding hazards and eliminating or minimizing them before the job is performed. It can serve as a guide in new employee training, for periodic contracts, and for retraining of senior employees, as a refresher on jobs which run infrequently, as an accident investigation tool, and for informing employees of specific job hazards and protective measures.

Set priorities for doing JHAs: Jobs that have a history of many accidents, jobs that have produced disabling injuries, jobs with high potential for disabling injury or death, and new jobs with no accident history.

Here is how to do each of the three parts of a Job Hazard Analysis:

SEQUENCE OF BASIC JOB STEPS

Break the job down into steps. Each of the steps of a job should accomplish some major task. The task will consist of a set of movements. Look at the first set of movements used to perform a task, and then determine the next logical set of movements. For example, the job might be to move a box from a conveyor and putting it on a hand truck is one logical set of movements, so it is one job step. Everything related to that one logical set of movements is part of that job step.

The next logical set of movements might be pushing the loaded hand truck to the storeroom. Removing the boxes from the truck and placing them on the shelf is another logical set of movements. And finally, returning the hand truck to the receiving area might be the final step of this type of job.

Be sure to list all the steps in a job. Some steps might not be done each time – checking the casters on a hand truck for example. However, that task is a part of the job as a whole, and should be listed and analyzed.

POTENTIAL HAZARDS

Identify the hazards associated with each step. Examine each step to find and identify hazards, actions, and conditions that could lead to an accident.

It is not enough to look at the obvious hazards. It is also important to look at the entire environment and discover every conceivable hazard that might exist.

Be sure to list health hazards as well, even though the harmful effect may not be immediate. A good example is the harmful effect of inhaling a solvent or chemical dust over a long period of time.

It is important to list all hazards. Hazards contribute to accidents, injuries, and occupational illnesses.

In order to do part three of a JHA effectively, you must identify potential and existing hazards. That is why it is important to distinguish between a hazard, an accident, and an injury. Each of these items has a specific meaning.

HAZARD – A potential danger. Oil on the floor is a hazard.

ACCIDENT – An unintended happening that may result in injury, loss, or damage. Slipping on the oil is an accident.

INJURY – the result of an accident. A sprained wrist from the fall would be an injury.

Some people find it easier to identify possible accidents and illnesses and work back from them to the hazards. If you do that, you can list the accident and illness types in parentheses following the hazard. But be sure you focus on the hazard for developing recommended actions and safe work procedures.

RECOMMENDED ACTION

Using the first two columns as a guide, decide what actions are necessary to eliminate or minimize the hazards that could lead to an accident, injury, or occupational illness.

Among the actions that can be taken are:

1) engineering the hazard out; 2) providing personal protective equipment; 3) job instruction training; 4) good housekeeping; and 5) good ergonomics (positioning the person in relation to the machine or other elements in the environment in such a way as to eliminate stresses and strains).

List recommended safe operating procedures on the form, and also list required or recommended personal protective equipment for each step of the job.

Be specific. Say exactly what needs to be done to correct the hazard, such as, "lift using part of your leg muscles." Avoid general statements like "be careful."

Give a recommended action or procedure for every hazard.

If the hazard is a serious one, it should be corrected immediately. The JHA should then be changed to reflect the new conditions.

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| JOB HAZARD ANALYSIS #1 | JOB: Water feature maintenance Remove Macrophytes, clean filters | Date: | Page ____ of ____ pages | <input type="checkbox"/> NEW <input type="checkbox"/> REVISED |
| Instructions on Reverse Side | Team members: | Supervisor(s): | Developed by: | |
| Department: | | Safety Officer: | | |
| Recommended Personal Protective Equipment: | | | | |
| Sequence of Basic Job Steps | Potential Hazards | Recommended Control Measures | | |
| Conduct site safety characterization: Determine size of area to be serviced. Access and egress points Existence of aquatic animals Possible pollutants Location of pump inlets and outlets | Excessive distance from rescue points Difficult access and egress Alligators, poisonous snakes, turtles Potential exposure to chemical and biological hazards Potential entrapment in pipes and drains | <i>Drain lake</i> <i>Establish rescue plans based on size and depth of work area</i> <i>Develop map showing depth, designated work areas, rescue and access points</i> <i>Utilize floating work platforms and construct water level access points</i> <i>Sweep and clear work area of all dangerous animals (F&G)</i> <i>Conduct water sampling and testing prior to work beginning</i> <i>Locate and identify all plumbing and electric features – Lock out / tag out pumps</i> <i>Determine outlet locations</i> | | |
| Remove macrophytes (water plants) | Hazards working in the water – drowning, hypothermia, chemical – biological exposures, electrocution Unstable work platforms – slips, trips, falls Visibility - entanglement, entrapment | <i>Buddy system – two man teams in or around the water</i> <i>Utilize Mod level D - helmet, PFD, nonslip shoes, work gloves, (Dry suit if testing shows high levels of water borne contaminants)</i> <i>Dedicated rescue team for each team in the water</i> <i>Anchor work platforms and boats, ensure platforms or boats are not over loaded</i> <i>Monitor wx conditions – Thunder storms: if thunder heard leave water for 30 min</i> <i>Do not enter the water</i> | | |
| Disposal | Removing debris from lake – potential injuries from lifting heavy wet loads Working around heavy equipment | <i>Utilized mechanical equipment to remove debris – front end loaders, cranes, conveyors, ramps</i> <i>Develop traffic plan for heavy equipment with designated routes with spotters</i> | | |
| Clean Filters and Drains | Drowning, entrapment, engulfment | <i>Buddy system, Utilize SCUBA, Dry suit and adequate lighting, develop comms – radio</i> <i>Insure all pumping and electrical systems are locked and tagged out</i> <i>Rescue teams standing by</i> | | |
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SEQUENCE OF BASIC JOB STEPS

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Here is how to do each of the three parts of a Job Hazard Analysis:

parentheses following the hazard. But be sure you focus on the hazard for developing recommended actions and safe work procedures.

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It is not enough to look at the obvious hazards. It is also important to look at the entire environment and discover every conceivable hazard that might exist.

Be sure to list health hazards as well, even though the harmful effect may not be immediate. A good example is the harmful effect of inhaling a solvent or chemical dust over a long period of time.

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In order to do part three of a JHA effectively, you must identify potential and existing hazards. That is why it is important to distinguish between a hazard, an accident, and an injury. Each of these items has a specific meaning.

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Some people find it easier to identify possible accidents and illnesses and work back from them to the hazards. If you do that, you can list the accident and illness types in

RECOMMENDED ACTION

Using the first two columns as a guide, decide what actions are necessary to eliminate or minimize the hazards that could lead to an accident, injury, or occupational illness.

Among the actions that can be taken are:

- 1) engineering the hazard out;
- 2) providing personal protective equipment;
- 3) job instruction training;
- 4) good housekeeping; and
- 5) good ergonomics (positioning the person in relation to the machine or other elements in the environment in such a way as to eliminate stresses and strains).

List recommended safe operating procedures on the form, and also list required or recommended personal protective equipment for each step of the job.

Be specific. Say exactly what needs to be done to correct the hazard, such as,

"lift using part of your leg muscles."
Avoid general statements like "be careful."

Give a recommended action or procedure for every hazard.

If the hazard is a serious one, it should be corrected immediately. The JHA should then be changed to reflect the new conditions.

JHA SCERANIO #1

BACKGROUND

Employees working for a lake management company will be performing maintenance on a 4.5 acre water feature at a golf course. The company maintains lakes by keeping them free of rubbish, algae and aquatic plants (macrophytes)*, cleaning filters and applying lake related chemicals (e.g. herbicides, copper sulfate).



WEATHER

Clear and warm, Temperature – 100 f, Relative humidity – 33%, Wind – 11.5 mph from the SE

SCOPE OF WORK

Employees will be working from a small boat (10ft flat bottomed aluminum) “corralling” weeds from the golf course lake. Corralling is a management tool used to gather floating weeds and move them to the shoreline for disposal. During this procedure a rope is deployed in a circular pattern around the weeds to extract them from the lake bottom and pull them to shore.

EQUIPMENT

- 10 ft, square nosed, flat-bottom aluminum boat
- Poled net
- Rope



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| JOB HAZARD ANALYSIS #1 | JOB: Water feature maintenance Remove Macrophytes, clean filters | Date: | Page ___ of ___ pages | <input type="checkbox"/> NEW <input type="checkbox"/> REVISED |
| Instructions on Reverse Side | Team members: | Supervisor(s): | Developed by: | |
| Department: | | Safety Officer: | | |
| Recommended Personal Protective Equipment: | | | | |
| Sequence of Basic Job Steps | Potential Hazards | Recommended Control Measures | | |
| Conduct site safety characterization: Determine size of area to be serviced. Access and egress points Existence of aquatic animals Possible pollutants Location of pump inlets and outlets | Excessive distance from rescue points Difficult access and egress Alligators, poisonous snakes, turtles Potential exposure to chemical and biological hazards Potential entrapment in pipes and drains | <i>Drain lake</i> <i>Establish rescue plans based on size and depth of work area</i> <i>Develop map showing depth, designated work areas, rescue and access points</i> <i>Utilize floating work platforms and construct water level access points</i> <i>Sweep and clear work area of all dangerous animals (F&G)</i> <i>Conduct water sampling and testing prior to work beginning</i> <i>Locate and identify all plumbing and electric features – Lock out / tag out pumps</i> <i>Determine outlet locations</i> | | |
| Remove macrophytes (water plants) | Hazards working in the water – drowning, hypothermia, chemical – biological exposures, electrocution Unstable work platforms – slips, trips, falls Visibility - entanglement, entrapment | <i>Buddy system – two man teams in or around the water</i> <i>Utilize Mod level D - helmet, PFD, nonslip shoes, work gloves, (Dry suit if testing shows high levels of water borne contaminants)</i> <i>Dedicated rescue team for each team in the water</i> <i>Anchor work platforms and boats, ensure platforms or boats are not over loaded</i> <i>Monitor wx conditions – Thunder storms: if thunder heard leave water for 30 min</i> <i>Do not enter the water</i> | | |
| Disposal | Removing debris from lake – potential injuries from lifting heavy wet loads Working around heavy equipment | <i>Utilized mechanical equipment to remove debris – front end loaders, cranes, conveyors, ramps</i> <i>Develop traffic plan for heavy equipment with designated routes with spotters</i> | | |
| Clean Filters and Drains | Drowning, entrapment, engulfment | <i>Buddy system, Utilize SCUBA, Dry suit and adequate lighting, develop comms – radio</i> <i>Insure all pumping and electrical systems are locked and tagged out</i> <i>Rescue teams standing by</i> | | |
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INSTRUCTIONS FOR COMPLETING JOB HAZARD ANALYSIS FORM

Job Hazard Analysis (JHA) is an important accident prevention tool that works by finding hazards and eliminating or minimizing them before the job is performed. It can serve as a guide in new employee training, for periodic contracts, and for retraining of senior employees, as a refresher on jobs which run infrequently, as an accident investigation tool, and for informing employees of specific job hazards and protective measures.

SEQUENCE OF BASIC JOB STEPS

Break the job down into steps. Each of the steps of a job should accomplish some major task. The task will consist of a set of movements. Look at the first set of movements used to perform a task, and then determine the next logical set of movements. For example, the job might be to move a box from a conveyor and putting it on a hand truck is one logical set of movements, so it is one job step. Everything related to that one logical set of movements is part of that job step.

The next logical set of movements might be pushing the loaded hand truck to the storeroom. Removing the boxes from the truck and placing them on the shelf is another logical set of movements. And finally, returning the hand truck to the receiving area might be the final step of this type of job.

Be sure to list all the steps in a job. Some steps might not be done each time – checking the casters on a hand truck for example. However, that task is a part of the job as a whole, and should be listed and analyzed.

Set priorities for doing JHAs: Jobs that have a history of many accidents, jobs that have produced disabling injuries, jobs with high potential for disabling injury or death, and new jobs with no accident history.

Here is how to do each of the three parts of a Job Hazard Analysis:

parentheses following the hazard. But be sure you focus on the hazard for developing recommended actions and safe work procedures.

POTENTIAL HAZARDS

Identify the hazards associated with each step. Examine each step to find and identify hazards, actions, and conditions that could lead to an accident.

It is not enough to look at the obvious hazards. It is also important to look at the entire environment and discover every conceivable hazard that might exist.

Be sure to list health hazards as well, even though the harmful effect may not be immediate. A good example is the harmful effect of inhaling a solvent or chemical dust over a long period of time.

It is important to list all hazards. Hazards contribute to accidents, injuries, and occupational illnesses.

In order to do part three of a JHA effectively, you must identify potential and existing hazards. That is why it is important to distinguish between a hazard, an accident, and an injury. Each of these items has a specific meaning.

HAZARD – A potential danger. Oil on the floor is a hazard.

ACCIDENT – An unintended happening that may result in injury, loss, or damage. Slipping on the oil is an accident.

INJURY – the result of an accident. A sprained wrist from the fall would be an injury.

Some people find it easier to identify possible accidents and illnesses and work back from them to the hazards. If you do that, you can list the accident and illness types in

RECOMMENDED ACTION

Using the first two columns as a guide, decide what actions are necessary to eliminate or minimize the hazards that could lead to an accident, injury, or occupational illness.

Among the actions that can be taken are:

- 1) engineering the hazard out;
- 2) providing personal protective equipment;
- 3) job instruction training;
- 4) good housekeeping; and
- 5) good ergonomics (positioning the person in relation to the machine or other elements in the environment in such a way as to eliminate stresses and strains).

List recommended safe operating procedures on the form, and also list required or recommended personal protective equipment for each step of the job.

Be specific. Say exactly what needs to be done to correct the hazard, such as,

"lift using part of your leg muscles."
Avoid general statements like "be careful."

Give a recommended action or procedure for every hazard.

If the hazard is a serious one, it should be corrected immediately. The JHA should then be changed to reflect the new conditions.