

ELECTRICAL SAFETY MOVES TO FIRST PLACE AS “MOST FREQUENTLY CITED NORTH CAROLINA OSHA STANDARD”

Listed below are the most recently published standards which were cited by North Carolina OSHA for all SIC’s (Standard Industrial Codes). EI has selected the top 25 citations for review as you perform strategic planning for your company's 1999 health and safety compliance program.

A few observations are worth noting. Historically, Hazards Communication, the number one cited standard for many years, has now dropped to third place. As you can see, out of the top then cited OSHA standards, electrical safety accounts for over 50% of all violations and 57% of the total NC OSHA penalties levied to industry.

Auditing Electrical Safety Practices

As you design your OSHA electrical safety compliance program for 1999, you may want to consider the following priorities when auditing current industrial electrical practices:

- Documents that all electrical work conforms to NEC standards and that employees (or contractors) have the necessary training to perform jobs safely.
- Review your lockout/tagout written program and procedures to assure that each piece of equipment or machinery has its own system for de-energizing.
- Determine if your facility has an approved grounding plan in place which includes ground fault interruption for electrical sources.
- Make sure that the written electrical safety program, employee training and required sign-out forms (such as lockout/tagout logs) are documented, current with existing work procedures and made available to all employees for review and reference.

Top 25 Cited OSHA Standards In North Carolina		
<u>Rank</u>	<u># Cited</u>	<u>OSHA Standard Cited</u>
1	267	Electrical, Wiring Methods, Components & Equipment
2	151	Electrical Systems Design
3	144	HAZCOM
4	114	Portable Fire Extinguishers
5	90	Machines, General Requirements
6	86	Electrical, Wiring Design & Protection
7	76	Abrasive Wheel Machinery
8	75	Lockout/Tagout
9	70	Means of Egress
10	67	Guarding Floor & Wall Openings & Holes
11	61	Mechanical Power/Transmission Apparatus
12	58	Walking-Working Surfaces
13	56	Personal Protective Equipment
14	51	Life Safety Code
15	51	Occupational Noise Exposure
16	49	Permit-Required Confined Spaces
17	48	Woodworking Machinery Requirements
18	46	PSM, Highly Hazardous Chemicals
19	40	Bloodborne Pathogens
20	38	Employee Emergency & Fire Prevention Plans
21	36	Medical Services & First Aid
22	34	Powered Industrial Trucks
23	28	Oxygen-Fuel Gas Welding & Cutting
24	25	Electrical Use of Equipment
25	23	Flammable and Combustible Liquids
1784		Total Violations Cited

OSHA TRAINING AN ESSENTIAL ELEMENT OF SAFETY COMPLIANCE

One of the fundamental building blocks to comprehensive OSHA compliance is the development and implementation of effective OSHA employee training programs. Compliance with OSHA standards require that employees in general industry are trained in accordance with their specific job functions. The table to the right provides a summary of OSHA compliance training programs that are applicable to the majority of SIC classifications in North Carolina.

All facility OSHA training programs should be evaluated annually to determine if they comply with OSHA standards. The evaluation review should at a minimum include the following elements::

- Review of the training curriculum for each OSHA standard to determine if training courses comply with the most recent OSHA revisions.
- Review of facility personnel to determine if new employees or if employees with new job assignments are receiving the proper OSHA training with respect to their particular occupation.
- Review of employee personnel files to assess whether facility human resource records contain updated job descriptions and proper documentation of OSHA training.

SIX STEPS TO EFFECTIVE SAFETY TRAINING

Regardless of how valuable the training information or how critical the content may be, it is a challenge to be an effective safety compliance trainer. Professional trainers agree on several basic principles of how adults learn and what it takes to organize and conduct a good training program. The following list of training tips should enhance the transfer and retention of safety information to class participation.

Safety Training Tips

1) Custom tailor the presentation

Make sure your presentations are customized-tailored to your specific audience's needs and interests as possible. In order to get attention focused on the content of the presentation, answer the question, "How does this course apply to the students?". Make sure the training curriculum and audiovisuals include actual facility situations pertinent to all employees and their particular job. Facility-specific training tailored to the audience generates further interest and dialogue regarding the information presented, thereby increasing chances that course attendees will ask questions and participate in training. Solicit personal experiences regarding the course training materials from the audience and use these experiences as a teaching aid.

OSHA REQUIRED BY MOST SIC CLASSIFICATIONS

FIRE PREVENTION

Training should include emergency evacuation procedures, fire prevention and the use of fire extinguishers.

PERSONAL PROTECTIVE EQUIPMENT

Annual training on the proper use and maintenance of PPE for hearing and respiratory protection, safety glass, shoes and gloves and other protection clothing.

HEARING CONSERVATION

Required for employees exposed to 85 dBA on an 8-hour time weighted average. Training includes the effects of excessive noise on hearing, the purpose, selection, fitting, use and care of hearing protectors and the purpose/explanation of audiometric testing.

LOCKOUT/TAGOUT

Training should provide practical knowledge for the recognition and safe isolation of hazardous energy sources.

ELECTRICAL SAFETY WORK PRACTICES

Training is required for qualified personnel permitted to work on or near exposed energized parts. This training focus on techniques necessary to distinguish exposed live parts from other equipment and determine voltages/clearances associated with live parts.

CONFINED SPACE

Training should provide working knowledge of OSHA's permit-required confined space standard, recognition/evaluation of permit required confined space hazards, elements of air monitoring.

HAZWOPER

First responder awareness training should familiarize the participant with hazardous substances and other risks during an incident, levels/use of PPE, decontamination techniques, proper work practices which minimize risk from hazards, medical surveillance requirements and use of the DOT emergency Response Guidebook.

FIRST AID/INJURY MANAGEMENT

Should be taught by health professionals certified by American Red Cross or other licensing body.

HAZARD COMMUNICATION

Course training should include a review of the OSHA HAZCOM standard, key elements of a hazard communication written program, an overview of MSDS and hazardous chemical labeling.

BLOODBORNE PATHOGENS

Course training should provide an overview of OSHA Standard (29 CFR 1910.1030) and include information on epidemiology, the transmission, symptoms and treatment of HIV, the principles of infection control and proper methods of disposal of regulated medical waste.

EQUIPMENT TRAINING

This training should feature fundamentals associated with safe operation of industrial trucks, grinder, presses and saws and include PPE requirements for specific equipment usage.

PROCESS SAFETY MANAGEMENT

Training emphasizes risk recognition, employee awareness and involvement and methodology associated with conducting a Process Hazard Analysis for highly hazardous chemicals.

If the owner/operator is not eligible for Program 1, the process will be classified as Program 3 if:

1. The process is subject to Process Safety Management, or
2. The process is part of an industry defined by specific SIC codes (see table).

Otherwise, the process will fall into Program 2, which requires less effort and information for Prevention Program compliance, but is otherwise identical to Program 3.

SIC Codes For Processes Designated as Program 3

2611 – Pulp Mills
 2812 – Industrial Inorganic Chemicals, Alkalies and Chlorine
 2819 – Industrial Inorganic Chemicals, Not Elsewhere Classified
 2821 – Plastics, Materials, Synthetic Resins, and Nonvulcanizable Elastomers
 2865 – Cyclic Organic Crudes and Intermediates, and Organic Dyes and Pigments
 2869 – Industrial Organic Chemicals, Not Elsewhere Classified
 2873 – Agricultural Chemicals, Nitrogenous Fertilizers
 2879 – Pesticides and Agricultural Chemicals, Not Elsewhere Classified
 2911 – Petroleum Refining

Offsite Analysis

A significant aspect of the RMP rules is the requirements to analyze offsite consequences of an accidental release. During the workshop, participants had an opportunity to use both software (RMP*comp) and look-up tables to determine the distances to toxic or overpressure endpoints. The determination of these endpoints, or radii of impact, delineates the boundary within which the owner/operator must identify public receptors. Although DAQ is encouraging the use of the tables and RMP*Comp because of their simplicity, owners in residential areas should be cautious. These tools yield conservatively large radii of impact and therefore maximize a facility's communication commitment to the neighborhood. More sophisticated models may reduce that radius of impact.

SOME COMMON COMPOUNDS INCLUDED IN RMP

Compound	Threshold Quantity (lbs)
Ammonia	10,000
Ammonia (20% Solution)	20,000
Chlorine	2,500
Toluene Diisocyanate	10,000
Formaldehyde	15,000
Propane	10,000

RMP Plan Submittal

USEPA requires that owners/operators submit their RMP plan by June 21, 1999. The forms to be used for the submission must be submitted electronically on software scheduled to be available in January 1999. The software, RMP*Submit has just been completed and final changes are being made.

EPA suggests that owners/operators may want to download Beta RMP*Submit to become familiar with the software program, as well as with the requirements for RMPs. **Paper copies of the forms will not be accepted unless the owner/operator has received a waiver in advance of the submittal date.**

Enforcement

DAQ is in the process of developing Memoranda of Agreement with the Division of Environmental Health, Division of Water Quality, Division of Emergency Management, and the Department of Agriculture to monitor compliance with the 112 (r) rules. This will allow the State to have greater opportunity to enforce compliance with the regulations. Although there is no collaborative agreement with NIOSH, the USEPA has entered into an agreement with Federal OSHA to further coordinate compliance efforts. **Finally, USEPA will retain authority of the General Duty Clause**, which states that owners/operators have a general duty to identify hazards, take steps to prevent releases, and minimize any consequences of a release, **even if the substance or process is not covered by the rules.**

ET's staff of engineers are experienced with providing and preparing RMP and PSM plans for numerous clients with varied chemical processes. For more information contact us at 1-800-717-3472, ext. 245.

NCDENR EASES ANALYTICAL REQUIREMENTS FOR UNDERGROUND STORAGE TANK CLOSURE

Due to the high costs and excessive sampling required for UST closure investigations under the January 2, 1998 guidelines, *Groundwater Section Guidelines for the Investigation and Remediation of Soil and Groundwater (Volume II – Petroleum Underground Storage Tanks)*, The North Carolina Department of Environment and Natural Resources (NCDENR) has changed the analytical requirements for closure of regulated USTs. According to a letter dated August 21, 1998, NCDENR will allow the use of Total Petroleum Hydrocarbons (TPH) Methods 5030 and 3550 to meet the regulated UST closure requirements.

These changes in analytical methods should significantly reduce the laboratory costs incurred during closure of regulated USTs. However, samples must still be collected from all locations outlined in the January 2, 1998 guidelines. A "no further action" letter may be issued to sites at which all analytical results are less than 10 milligrams per kilogram (mg/kg) TPH.

SUMMARY OF ANALYTICAL REQUIREMENTS FOR UST CLOSURE

Fuel Type	January 2, 1998 Analytical Requirements	Revised Requirements as of Aug. 24, 1998
Low Boiling Point Fuels gasoline, aviation gasoline, gasohol, etc.	1) Volatile organics by EPA 8260 (including IPE and MTBE) AND 2) MADEP VPH: Alkines/Aromatics	1) TPH (Low Boiling Point) - 5030 sample preparation with modified 8015 (California GC-FID Method)
Medium/High Boiling Point Fuels: jet fuel, kerosene, diesel, varsol, mineral spirits, naphtha, fuel oil #2, etc.	1) EPA 8260 (as above) AND 2) MADEP VPH: Alkines/Aromatics AND 3) Semivolatile organics by EPA 8270 AND 4) MADEP EPH: Alkines/Aromatics	1) TPH (Low Boiling Point) - 5030 sample preparations with modified 8015 (California GC-FID Method) 2) TPH (High Boiling Point) - 3550 sample preparation with modified 8015 (California GC-FID Method)
Heavy Fuels: #4, #5, #6 fuel oils: motor oil, Hydraulic fuel, etc.	1) EPA 8270 (as above) AND 2) MADEP EPH: Alkines/Aromatics	1) TPH (High Boiling Point) - 3550 sample preparation with modified 8015 (California GC-FID Method)

If obvious contamination (e.g. petroleum-saturated soil, large hole in tank, free product in excavation, etc.) remains after a regulated UST has been removed, sampling can be reduced to one confirmation sample from beneath each tank, plus the required samples beneath the lines and dispensers.

However, the change in requirements for analytical methods applies **only** to closure of regulated USTs; additional assessment at UST sites (e.g. Limited Site Assessment, Soil Assessment Reports, or Comprehensive Site Assessments) must utilize risk-based analytical parameters presented in the 1/2/98 guidelines. In addition, if analytical results from any samples collected during UST closure activities exceed 10 mg/kg TPH, the responsibility party must proceed to a Soil Assessment or a Limited Site Assessment in accordance with the Risk-Based rule [15A NCAC 2L.0115(c)].

Additional information on the original January 2, 1998 Risk Based Rules can be obtained from EI Alert Vol. 8, No. 4. Please visit our website at www.ei1.com to review this article.

**Requirements for Waste Oil Tank Closure
Also Modified**

The January 2, 1998 guidelines also required a considerable number of analytical parameters for the closure of UST's containing waste oil. The August 24, 1998 letter from NCDENR also includes

Changes in the analytical requirements for closure of waste oil UST's. These new changes significantly reduced the number and cost for analysis required for UST waste oil closure by including the substitution of TPH Methods 5030 & 3550 for analysis to meet UST waste oil closure requirements. Detection of TPH at concentrations of greater than 10 mg/kg would require the tank owner/operator to proceed with additional investigation as described in the January 2, 1998 requirements.

A detailed summary of the analytical changes for waste oil USTs is described in Table 2 of EI Alert, Vol. 8 No. 9. Visit our website at www.ei1.com to review these new analytical requirements.

← **DEADLINE FOR UST UPGRADES IS
APPROACHING!** →

By December 22, 1998, all regulated UST systems must meet the requirements for leak detection, corrosion protection, and spill/overflow protection as described in the federal UST regulations. Tank owners/operators are required to comply with these regulations by December 22, 1998 or permanently close the UST systems in accordance with federal and state regulations.

OSHA'S NOISE STANDARD DOES YOUR AUDIOMETRIC TESTING PROGRAM COMPLY?

The OSHA noise standard states, "the employer shall establish and maintain an audiometric testing program for all employees whose exposure equal or exceed an 8-hour time-weighted average of 85 decibels."

Audiometric tests are performed by a licensed or certified audiologist, otolaryngologist or other physician, or by a qualified technician. A qualified technician must be certified by the Council of Accreditation in Occupational Hearing Conservation (CAOHC), or has satisfactorily demonstrated competence in administering audiometric examinations, obtaining valid audiograms and properly using, maintaining and checking calibration and functioning of the audiometers being used. A technician who performs audiometric tests must report to an audiologist, otolaryngologist or physician.

Baseline audiograms are to be completed within 6 months of an employee's first exposure at or above the action level. The employer shall establish a valid baseline audiogram, against which subsequent audiograms can be compared to determine if a standard threshold hearing shift has occurred. This comparison may be done by a qualified technician. Testing to establish a baseline audiogram shall be preceded by at least 14 hours without exposure to workplace noise. Hearing protectors may be used as a substitute for the requirements; therefore employees can be tested after they have begun working in areas that are above 85dBA, as long as hearing protection is effectively worn prior to the test.

Audiometric tests are pure tone, air conduction, hearing threshold examinations with test frequencies including a minimum 500, 1000, 2000, 3000, 4000 and 6000 Hz. Tests are conducted with audiometers (including microprocessor audiometers) that meet the specifications of, and are maintained and used in accordance with, the American National Standard Specification for Audiometers. Tests need to be administered in a setting meeting the requirements listed in Appendix D (mandatory) of the standard.

In addition to offering a Council for Accreditation in Occupational Hearing Conservation (CAOHC) approved "hearing Conservation and Audiometric Testing" training course, EI has also conducted audiometric testing for a wide variety of industrial clients. For more information regarding noise

Steps to OSHA Noise Compliance

- **Noise Survey** – determines compliance requirements
- **Selection of Hearing Protection Devices**
- **Employee Base-Line & Annual Audiograms**
- **Employee Training**
- **Follow Up** of abnormal audiograms which indicate a potential shift in hearing
- **Recordkeeping**

monitoring, hearing conservation training or audiometric testing, please contact EI at 1-800-717-3472.

NC DEPARTMENT OF LABOR FOCUSES ON LOWERING CONSTRUCTION FACILITIES

In 1997, several small businesses in North Carolina reported high numbers of workplace construction fatalities. The NC Department of Labor plans to launch an initiative to focus on training and on-site education efforts for these businesses. Over a 12-month period, which ended in August, the state recorded 28 construction-related fatalities.

Most of these construction-related fatalities occurred in North Carolina's two largest counties, Mecklenburg and Wake. Over a 12 month period, Mecklenburg County reported 6 deaths and Wake County reported 7 on-the-job fatalities. Both counties lead the state in commercial and residential construction with Mecklenburg reported \$1.8 billion and Wake at \$1.7 billion.

RISK MANAGEMENT PROGRAM UPDATE DAQ HOLDS WORKSHOPS

The North Carolina Division of Air Quality (DAQ) has been conducting Risk Management Program (RMP) workshops around the state to support the efforts of the regulated community in complying with these rules. The agenda included these major elements: prevention program, emergency response and plan submittal. This article provides a summary of the highlights of these elements.

Rule Applicability

The goal of the regulation is to **prevent accidental releases** of chemicals that could cause immediate, serious harm to human health and the environment and to **communicate accident and prevention information to the public**. Owners/operators having more than threshold quantities of any of the listed compounds in a process at any one time are covered by the rule. These are 77 toxic and 63 flammable substances designated by the rule.

Three program levels exist within the RMP regulation. Program 1 requires the least effort for compliance – the most significant element under Program 1 is the worse-case analysis. Programs 2 and 3 require increasingly more attention, especially regarding the prevention program portion. Should the process also be covered by Process Safety management (PSM), a correctly prepared PSM plan will satisfy the prevention requirements associated with the more onerous Program 3.

For a process to qualify for Program 1 (the least rigorous), the following criteria must be met:

1. No accidental releases in the last 5 years
2. No public receptors impacted under worse-case scenarios
3. Emergency procedures have been coordinated with local responders.

2) Keep it simple and stimulating

People retain material best in short, concise segments. Initially, it takes ten minutes for a person to focus on course training materials. After the first ten minutes, the optimum learning begins and continues for about 20-30 minutes. Following the optimum learning period, an adult's attention span begins to diminish. Therefore, an effective training program should not be more than 45 minutes long. Focusing attention on several key issues and repeating them so participants retain these concepts should be an instructor's objective. Identify methods to transfer information memorably, emphasizing a few key fundamental points.

3) Allow multiple avenues for learning

Not everyone learns effectively by reading course material handouts. Most adults learn best by active course participation. In addition to a written course handout, make sure that a number of other avenues for learning are present. These additional teaching aids can include visually stimulating overheads, a special guest speaker, and class activities (such as group discussions and "hands-on" exercises, including the use of a group prop or conversation piece). Blend diversity into your program through the use of real world examples of actual occupational experiences which reflect the course training topics. Provide time for learning to occur at your participants' pace, not yours.

4) Make the learning experience a positive one

Make sure there are multiple opportunities in your training program to be successful. Create a situation where class participants are free to express their thoughts without fear of reprisal. Ask questions which have no correct or incorrect answers, but provide opportunities for discussion. Thank participants for their insights, suggestions, feedback and questions. Make good examples of participants who share stories reflecting safe behavior in their particular job, including any positive impact these experiences have on the behavior of coworkers. Administer a group test where everyone has some input in providing correct answers.

5) Use your participants as trainers

Participants in training program are often your best resource for practical solution to complex safety issues. Given the opportunity to discuss implementation of safety procedures in their work area, the experienced participants will devise new methods to incorporate safety features into their routine operations. This type of discussion serves to effectively train newer employees because of their familiarity with only a limited number of specific plant processes and operations.

6) Follow-up

Monitor your class participants in the work environment following completion of each training course. Reinforce and reiterate fundamental course concepts through discussion of work practices with previously trained employees. Ask them how they are relating what they learned during safety training to their routine job responsibilities. Follow-up in the work environment is critical to your employees' training success.

Call the EI Training & Compliance Center for a 1999 Safety, Industrial Hygiene and Occupational Health Training Catalog at 1-800-717-3472.

SPILL PLANS "COMPLIANCE VERSUS COMMON SENSE PROTECTION"

Oil pollution protection rules have been in place for more than 20 years with the only major modifications coming from the Oil Pollution Act of 1990 (OPA '90). The requirement to prepare and implement a spill response plan, either a Spill Prevention Control and Countermeasures (SPCC) Plan or a Facility Response Plan (FRP), is determined by the volume of oil storage capacity on site. The insert below provides the threshold oil storage capacities above which an SPCC Plan or FRP is required. It is important to remember that the volume thresholds are capacity figures, not actual volumes of stored material. Also, the definition of oil is broadly defined to include, "petroleum, fuel oil, sludge, oil refuse and oil mixed with wastes." the definition has been interpreted to also include vegetable, mineral, and transformer oils.

You need an SPCC Plan if the capacity of:

1. all above ground tanks is 1,320 gallons or more,
2. one above ground tank is 660 gallons or more,
or
3. all underground tanks is 42,000 gallons or more.

You need an FRP if the total capacity of all tanks is:

1. 42,000 gallons or more (if the material is transferred over water)
or
2. 1,000,000 gallons or more.
(FRPs must be submitted and reviewed by the appropriate EPA Regional Office.)

Since there is no prescribed format, owners have shown varying levels of commitment to preparing and implementing SPCC plans. The previous lack of an established plan format has resulted in documents ranging from one SPCC Plans to plans that occupy 4-inch binders. In either case, the issue should always be the plan's workability.

Rather than approaching the effort as a compliance chore, owners should view a SPCC or FRP document as an opportunity to reduced liability from inadvertent spills or releases of petroleum products. A plan that is prepared with the understanding of practical limits, site-specific operations and work culture will offer valuable protection in the even of a release. Further, any environmental compliance plan should be developed to complement and include any existing emergency response procedures (whether officially documented or not). Generally the regulatory agencies agree that having a good plan, even if not required, will benefit the owner if a compliance inspection is required in response to a release incident.

