

**ADDENDUM
#3**

From: Lori Colon, Purchasing Agent
To: All Bidders
Date: March 3, 2015
Project: C&D Recycling Equipment

This addendum is issued in response to questions received, regarding the Request for Bids for the County's "C&D Recycling Equipment", so therefore is hereby made a part of said Request for Bids to the same extent as though it were originally therein.

- 1.) With regard to the requirement for securing any necessary construction or trades permits, can you provide the name and telephone number and/or website of the governing agency responsible for issuance of trade permits (not referring to construction permits)? This question includes an inquiry as to: does the township in which the jobsite resides, New Hanover County or the state of North Carolina mandate/govern such trades permits?

The governing agency is New Hanover County. The County's Development Services handles construction and trades permits and inspections. Their main telephone number is (910) 798-7060. The link to the web page is <http://planningdevelopment.nhcgov.com/permits-applications/>.

- 2.) With regard to the requirement for securing any necessary construction or trades permits (specifically construction permits) Green Machine Sales, LLC (GMS) assumes that shall not include permits specific to Life Safety and Egress Routing Plans. Once at the ground level it is assumed that egress from the work area is the responsibility of New Hanover County. A Life Safety and Egress Routing plan will be developed by the Department of Environmental Management, in conjunction with New Hanover County Risk Management and New Hanover County Fire Services.
- 3.) With regard to Section 3.4, Maintenance Support Services and the requirements for providing a detailed narrative; specifically off-site technical support and remote trouble-shooting reports. Is

it intended that the awarded bidder remotely access the awarded bidder's control system via the internet? If so, does the internet connection exist already, if so will the awarded bidder be able to be issued a static IP address? Or is this the intention of off-site technical support and remote trouble-shooting reports an analog approach via telephone conversations the intent?

Remote access trouble shooting, for the purposes of the RFB, was intended to allow the proposer to highlight their firm's ability to assist staff with correcting minor issues without the need for an on-site visit by a technician. This can be accomplished using several methods, including those outlined in the question above. The preferred method is one that is reliable, timely, and available during normal hours of operation (8:00 a.m. to 5:00 p.m. EST).

- 4.) With regard to the New Hanover County Environmental Management Contractor Compliance Requirements, can bidders get a copy of the Department of Environmental Management (DEM) Safety Manual as the time of question answers on March 3rd?

A .pdf version of the Safety Manual is attached to this Addendum

- 5.) Will restrooms be provided? In what proximity to the work area are they?

Men's and women's restrooms will be available to installation crews and subcontractors. They are located in the landfill office, which is adjacent to the project area.

- 6.) Is this a prevailing wage project?

No.

- 7.) In Section 3.1 C&D RECYCLING EQUIPMENT it calls for a sorting platform canopy. What is it you require for canopy type; vinyl, canvas or a more permanent solution with for example steel roof panels?

A rigid (metal) frame and panels is required.

- 8.) The RFB states a minimum of four pick stations with drop chutes, but also indicates; "C&D Recycling Equipment shall be of a design that is optimized for the diversion of scrap lumber (including wooden pallets), scrap metal, gypsum wallboard, carpet, asphalt shingles, and cardboard (OCC)." This equals 6 material types that would require 6 picking station; we believe the minimum should be six pick stations.

As a note of clarification, the four pick stations was intended to indicate the ability to employ up to eight personnel (4 stations on either side of the belt, with a drop chute at each station for a total of 8 drop chutes). We intend to utilize positive sorting techniques; carpet and scrap metals represent the smallest fractions. Carpet will be removed during pre-sorting on the pad and a fraction of the metals would be removed from the ferrous magnet from the fines. We encourage bidders to provide pricing for an additional magnet at the residue discharge end of the sort line within Item #6 (Optional Equipment Cost) of Section 4 (Bid Form/Price Sheet). Additionally, a six picking station option (12 drop chutes) may be added to Item 6, Section 4.

- 9.) Sort line description in 3.1.2 asks for 4 picking stations with drop chutes. This would only be 4 people sorting, but county staff have asked for 8 sorting staff. Is the county requiring a minimum of 8 picking stations? Note that 2 picking stations are able to sort to one roll off container, so 8 picking stations allow for 4 roll off containers and 4 different products.

To clarify, the intent of the specification was to allow for a minimum of four (4) picking stations on each side of the conveyor. This would require eight (8) drop chutes; two drop chutes for each of the four (4) rolloff containers.

- 10.)The required materials for recovery by the County in 3.1.3, are six products. Scrap lumber, Scrap metal, Gypsum wallboard, carpet, asphalt shingles and cardboard. This would require 6 roll off containers. Please clarify if the county requires 4 or 6 roll off containers for sorted materials?

Four (4) rolloff containers will be utilized under the picking stations. The intent is to remove ferrous metals with magnets and to remove carpet during pre-sorting.

- 11.)Does the County have a preferred size in terms of length and width for the concrete slab the recycling facility will be located on? This will help in the layout of the equipment to maximize efficient operation.

The preliminary design to develop a traffic flow pattern was initially established at 180 feet X 180 feet. We will work with the winning bidder to finalize the layout based on equipment design and layout.

- 12.)The RFB asks for a 1.5 inch to 2 inch screen opening but the addendum 2 states that 4 inch material is approved for ADC at the landfill. Can the vendor offer a larger screen opening to create more ADC from the system?

The proposers can offer alternative screen sizes in Item #6, Section 4 – Bid Form/Price Sheet.

- 13.)Addendum 2 states that the fines from the screen will be conveyed to a storage area. Can the county give an approximate capacity for the storage required in cubic yards? Is the vendor responsible for bunker walls on this storage area?

The county will provide for any necessary bunker walls, curbing, ramps, etc. under a separate contract. An initial meeting with the permitting agency indicated a preference for containerizing materials versus bulk storage. In the case of the fines, we expect to utilize 20, 30, or 40 cubic yard rolloff containers, depending on the weight of the fines.

- 14.)After seeing the size of materials such as cardboard and sheets of plywood at the current operation, would the County prefer a 72 inch wide sort line to allow these larger items to be sorted on the conveyor, rather than prior to the system?

For the purposes of the bid, respondents must provide pricing that includes a 60-inch wide sort line. If a sort line width of another dimension is recommended by the vendor, we encourage the respondents to utilize Item #6, Section 4 – Bid Form/Price Sheet.

15.) The throughput of 100 to 150 cubic yards per hour is only relevant if some type of capacity and purity tests are conducted, in order to verify the claims made by the vendor. Will the county be implementing a series of performance tests to validate the system throughput and purity?

Section 3.1.2, sixth bullet/specification indicates a “Demonstrated minimum design throughput of 100-150 cubic yards per hour”. Following final installation, the County will coordinate with the vendor to conduct three (3) supervised, timed test runs consisting of 100 cubic yards of mixed material each. Excluding pre-sort and downtime due to any operator error, the averaged time of the three (3) tests must be less than or equal to one hour. Material purity must exceed 95%, as established by an initial visual verification or certified weight ratios if contested. Fines removal must exceed 85% as observed through inspection of the residuals (residuals may not contain more than 15% fines). If the throughput and purity goals are not achieved, the vendor will be given the opportunity to take reasonable action to correct the deficiencies.

16.) Does the County have a preference for the type of screen used in the system? The use of a trommel or rotating disc screen would be problematic, but could meet the county requirements. Is there a preference for vibratory finger type screens due to the lower maintenance costs, reduced blinding, wrapping and spearing compared to trommels and disc screens?

The County would give preference to a finger screen.

17.) Will preference be given to domestically (USA) manufactured systems?

Yes.

18.) Does New Hanover County require a list of completed C&D Sorting System projects or customer references from each bidder?

We ask that each respondent provide three (3) references for projects of similar size and scope.

19.) Can you clarify the specified construction of the incline conveyor belt (i.e. steel or rubber belt)?

The incline conveyor belt will be of rubber construction. Respondents may add a steel incline conveyor under Item #6 (“Optional Equipment Cost”) of Section 4 (Bid Form/Price Sheet).

20.) Will the service conductors being supplied by DEP be sized for the “A” line capacity alone or for future “B” and “C” lines as well?

Sufficient capacity will be supplied to power all three lines.

21.) Does the County know the dimensions of the proposed concrete pad expansion of 25,000 sq. feet? Or will you be looking for the equipment vendor to specify what those need to be?

Please note that the location for installation of the C&D processing line has changed. The existing pad (33,000 square feet) will be utilized during construction of the new pad through final equipment installation in order to continue to divert material during the construction and installation process. After commissioning the new system, the existing concrete pad will be used

to stockpile and load out clean, sorted materials. The new pad will be approximately 32,400 square feet, based on a preliminary design of a reinforced concrete pad with a minimum thickness of 9 inches. In order to develop a preliminary traffic routing plan, the general dimensions of the new pad were established at 180 feet X 180 feet. This design will be finalized upon selection of, and consultation with, the winning bidder.

- 22.) Is an infeed hopper and infeed conveyor required to feed the system? It is our understanding, following the site visit, that the system will be loaded with an excavator. In that case, it is strongly recommended NOT to have an infeed hopper as this would be a significant issue for jams and bridging.

While the infeed hopper and infeed conveyor are not required to feed the system, they are a required component of the base bid. This ensures that all bidders are given an equal opportunity to provide a responsive, compliant bid. Bidders are encouraged to provide alternative bids and/or optional equipment based on their experience with material types, equipment features, and process optimization.

- 23.) In section 2.5, it states that a "Sample of Agreement – Draft Contract" is attached to the RFP, but we did not get that attachment when downloading the RFP. Can we obtain a copy of that agreement?

A copy of a draft contract is attached to this Addendum.

- 24.) Should the proposed canopy be sized ONLY for the current system (A Line) or should we take future expansion into consideration when designing the canopy? It will cost the County significantly more money to add on to the canopy than it will to design it larger to begin with.

In the base bid, please provide pricing that includes a canopy that is sized only for the A line. Optional equipment (such as a larger canopy) may be proposed in Item #6 of Section 4 – Bid Form/Price Sheet.

- 25.) Will the County consider alternative proposals or options as what is laid out in the RFP?

Yes. All bidders must submit a bid that satisfies the requirements of the base bid specifications. The ability to provide pricing for optional equipment is embedded within Item #6, Section 4 – Bid Form/Price Sheet. Alternative bids may utilize the same form (Section 4), which must be clearly marked as "ALTERNATIVE BID".

- 26.) Which of the two pieces of equipment is the RFB calling to be loaded by the excavator (which feeds the recycling system) - the (a) feed hopper/in-feed conveyor, or the (b) vibrating screen? Please see the attachment for visual reference.

The material will be loaded directly into the feed hopper/in feed conveyor. The material will then be conveyed to the vibrating screen.

- 27.) Power - will New Hanover County be responsible for bringing 3-phase power to the system supplier's electrical control panel?

Yes. For additional detail, please refer to Addendum #2.

28.)What is the height of the 40 cubic yard rolloff containers planned to be used for directing the sorted materials into? Eg. 8', or other?

The rolloff containers are eight (8) feet high.

29.)Will screened (1 1/2"-2" minus) fines and residue (material discharging off end of Sort Line) also plan to be discharged into 40 cubic yard rolloffs?

Containerizing the fines and the residue are preferred by the permitting agency. Based on the expected weight of the fines, smaller containers will likely be utilized to avoid over-stressing the rolloff truck's hoist and frame.

30.)In terms of the system throughput requirement of 100-150 *cubic yards per hour*, is the corresponding throughput requirement in *tons per hour* known? Eg. does this translate into 20-25 tons per hour throughput? or 25-30 tons per hour, or other (if known)?

A conversion rate of 500 pounds per cubic yard was utilized. This translates into a minimum throughput of 25 to 37.5 tons per hour.

Attachments:

1) Draft Contract

2) New Hanover County Environmental Management Safety Management and Health Manual

END OF ADDENDUM

NORTH CAROLINA

AGREEMENT

NEW HANOVER COUNTY

THIS CONTRACT made and entered into this _____ day of _____ 2015 by and between **NEW HANOVER COUNTY**, a political subdivision of the State of North Carolina, hereinafter referred to as "County"; and _____, hereinafter referred to as "Contractor."

WITNESSETH:

That the Contractor, for the consideration hereinafter fully set out, hereby agrees with the County as follows:

1. Scope of Services. Contractor shall sell, install and maintain construction and demolition debris recycling equipment, to include turn-key installation, on-site training in equipment operation, and general maintenance and maintenance support services for the New Hanover County Landfill located at 5210 Hwy., 421 N., Wilmington N.C., as fully described on Exhibit A, attached hereto and incorporated herein by reference.

2. Time of Performance. The term of this Agreement shall from Notice to Proceed until September 30, 2015.

3. Payment. County hereby agrees to pay for the cost of this Contract not to exceed a sum of _____ (\$ _____) Dollars.

4. Extra Work. County and Contractor shall negotiate and agree upon the value of any extra work or services prior to the issuance of a County Change Order or Renewal/Amendment (CRA) form covering said extra work or services. Such Change Order or CRA shall set forth the corresponding adjustment, if any, to the Contract Price and Contract Time.

5. Indemnity. Contractor shall indemnify and hold County, its officers, officials, agents, and employees, harmless against any and all claims, demands, causes of action, or other liability, including attorney fees, on account of Contract or personal injuries or death or on account of property damages arising out of or relating to the work or services to be performed by Contractor hereunder, resulting from the negligence of or the willful act or omission of Contractor, its agents, employees and subcontractors.

6. Insurance. Before commencing any work or services, Contractor shall procure insurance in Contractor's name and maintain all insurance policies for the duration of the Contract of the types and in the amounts listed in this Contract. The insurance shall provide coverage against claims for injuries to persons or damages to property which may arise from operations or in connection with the performance of the work hereunder by Contractor, its agents, representatives, employees, or subcontractors, whether such operations by itself or anyone directly or indirectly employed by it.

7. Minimum Scope and Limits of Insurance

7.1 Commercial General Liability

7.1.1 Contractor shall maintain Commercial General Liability (CGL) and if necessary, Commercial Umbrella Liability insurance with a total limit of not less than \$1,000,000 each occurrence for bodily injury and property damage. If such CGL insurance contains a general aggregate limit, it shall apply separately to this work or services, or the general aggregate shall be twice the required limit.

7.1.2 CGL insurance shall be written on Insurance Services Office (ISO) "occurrence" form CG 00 01 covering CGL or its equivalent and shall cover the liability arising from premises, operations, independent contractors, products-completed operations, personal and advertising injury, and liability assumed under an insured contract, including the tort liability of another assumed in a business contract.

7.1.3 County, its officers, officials, agents, and employees are to be covered as additional insureds under the CGL by endorsement CG 20 10 and CG 20 37 or an endorsement providing equivalent coverage as respects to liability arising out of activities performed by or on behalf of Contractor; products and completed operations of Contractor; premises owned, leased or used by Contractor; and under the commercial umbrella, if any. The coverage shall contain no special limitations on the scope of protection afforded to County, its officers, officials, agents, and employees.

7.1.4 Contractor's CGL insurance shall be primary as respects County, its officers, officials, agents, and employees. Any other insurance or self-insurance maintained by County, its officers, officials, agents, and employees shall be excess of and not contribute with Contractor's insurance.

7.2 Workers' Compensation and Employer's Liability

7.2.1 Contractor shall maintain Workers' Compensation as required by the general statutes of the State of North Carolina and Employer's Liability Insurance.

7.2.2 The Employer's Liability, and if necessary, Commercial Umbrella Liability insurance shall not be less than \$500,000 each accident for bodily injury by accident, \$500,000 each employee for bodily injury by disease, and \$500,000 policy limit.

7.2.3 The insurer shall agree to waive all rights of subrogation against County, its officers, officials, agents, and employees for losses arising from work or services performed by Contractor for County.

7.3 Business Auto Liability

7.3.1 Contractor shall maintain Business or Personal Auto Liability and, if necessary, Commercial Umbrella Liability insurance with a limit of not less than \$1,000,000 each accident.

7.3.2 Such insurance shall cover liability arising out of any auto, including owned, hired, and non-owned autos.

7.3.3 Business Auto coverage shall be written on ISO form CA 00 01, or a substitute form providing equivalent liability coverage. If necessary, the policy shall be endorsed to provide Contractual liability coverage equivalent to that provided in ISO form CA 00 01.

7.3.4 Contractor's Business Auto Liability insurance shall be primary as respects County, its officers, officials, agents, and employees. Any other insurance or self-insurance maintained by County, its officers, officials, agents, and employees shall be excess of and not contribute with Contractor's insurance.

7.4 Installation Floater

7.4.1 Contractor shall purchase and maintain in force Installation Floater insurance for the installation of equipment. Such insurance shall be written in an amount equal to the replacement cost of the equipment. The insurance shall apply on a replacement cost basis.

7.4.2 Insured property shall include portions of the work located away from the site but intended for use at the site, and shall also cover portions of the work in transit.

7.4.3 Installation Floater insurance shall name County as loss payee.

7.4.4 Installation Floater Insurance shall, at a minimum, cover the perils insured under the ISO special causes of loss form (CP 10 30).

7.4.5 Any deductible applicable to the Installation Floater shall be paid by Contractor

7.4.6 If County is damaged by the failure of Contractor to maintain Installation Floater insurance, then Contractor shall bear all reasonable costs properly attributable to that failure.

7.5 Deductibles and Self-Insured Retentions

7.5.1 Any deductibles or self-insured retentions must be declared to and approved by County. At the option of County, either the insurer shall reduce or eliminate such deductibles or self-insured retentions as respects County, its officers, officials, agents, or employees; or Contractor shall procure a bond guaranteeing payment of deductibles or self-insured retentions.

7.5.2 Contractor shall be solely responsible for the payment of all deductibles to which such policies are subject, whether or not County is an insured under the policy.

7.6 Miscellaneous Insurance Provisions

7.6.1 The policies are to contain, or be endorsed to contain, the following provisions:

7.6.2 Any failure to comply with reporting provisions of the policies listed in this Contract shall not affect coverage provided to County its officers, officials, agents, and employees.

7.6.3 Each insurance policy required by this Contract shall be endorsed to state that coverage shall not canceled by either party except after thirty (30) days prior written notice has been given to County, 230 Government Center Drive #125, Wilmington, NC 28403.

7.6.4 If Contractor's liability policies do not contain the standard ISO separation of insureds provision, or a substantially similar clause, they shall be endorsed to provide cross-liability coverage.

7.7. Acceptability of Insurers

7.7.1 Insurance is to be placed with insurers licensed to do business in the State of North Carolina with an A.M. Best's rating of no less than A VII unless County has granted specific approval.

7.8 Evidence of Insurance

7.8.1 Contractor shall furnish County with a certificate(s) of insurance, executed by a duly authorized representative of each insurer, showing compliance with the insurance requirements prior to commencing the work, and thereafter upon renewal or replacement of each certified coverage until all operations under this Contract are deemed complete.

7.8.2 Evidence of additional insured status shall be noted on the certificate of insurance as per requirements in this Contract.

7.8.3 With respect to insurance maintained after final payment in compliance with requirements, an additional certificate(s) evidencing such coverage shall be provided to County with final application for payment and thereafter upon renewal or replacement of such insurance until the expiration of the period for which such insurance must be maintained.

7.9 Sub-Contractors. Contractor shall include all sub-contractors as insureds under its policies or shall furnish separate certificates for each sub-contractor. All coverage for sub-contractors shall be subject to all of the requirements stated herein. CGL coverage shall include independent Contractors' coverage, and Contractor shall be responsible for assuring that all sub-Contractors are properly insured.

7.10 Conditions

7.10.1 The insurance required for this Contract must be on forms acceptable to County.

7.10.2 Where circumstances warrant, County may, at its discretion subject to acceptance by the Risk Management and Finance Department accept letters of credit or custodial accounts in lieu of specific insurance requirements.

7.10.3 Contractor shall provide that the insurance contributing to satisfaction of insurance requirements in this Contract shall not be canceled, terminated, or modified by Contractor without prior written approval of County.

7.10.4 Contractor shall promptly notify the New Hanover County Environmental Management Department and the Risk Management Office at (910) 798-7497 of any accidents arising in the course of operations under the Contract causing bodily injury or property damage.

7.10.5 County reserves the right to obtain complete, certified copies of all required insurance policies, at any time.

7.10.6 Failure of County to demand a certificate of insurance or other evidence of full compliance with these insurance requirements or failure of County to identify a deficiency from evidence that is provided shall not be construed as a waiver of Contractor's obligation to maintain such insurance.

7.10.7 By requiring insurance herein, County does not represent that coverage and limits will necessarily be adequate to protect Contractor and such coverage and limits shall not be deemed as a limitation of Contractor's liability under the indemnities granted to County in this Contract.

7.10.10 If Contractor fails to maintain the insurance as set forth herein, County shall have the right, but not the obligation, to purchase said insurance at Contractor's expense.

7.10.11 Contractor may apply to County for approval of higher deductibles based on financial capacity and quality of the carrier affording coverage.

7.10.12 County shall have the right, but not the obligation of prohibiting Contractor or any sub-contractor from entering the project site or withhold payment until such certificates or other evidence that insurance has been placed in complete compliance with these requirements is received and approved by County.

8. Independent Contractor. The parties mutually agree that the Contractor is an independent contractor and not an agent of the County, and as such, the Contractor shall not be entitled to any County employment benefits, such as, but not limited to, vacation, sick leave, insurance, workmen's compensation, or pension and retirement benefits.

9. Default and Termination. If Contractor fails to prosecute the work or services with such diligence as will insure its completion within the Contract time, or if Contractor breaches any of the terms or conditions contained in this Contract and fails

to cure said breach within two (2) days of County's mailing of Notice of Default, or otherwise fails to perform the work or services hereunder to the County's reasonable satisfaction, County may terminate this Contract forthwith. Upon termination, County may, without prejudice to an action for damages or any other remedy, take the prosecution of the work or services out of the hands of Contractor. County may enter into another Contract for the completion of the Contract, or use such other methods as may be required for the completion of the Contract. County may deduct all costs of completing the Contract from any monies due or which may become due to Contractor. In the event this Contract is terminated prior to completion of the services by the Contractor, the Contractor shall be paid for work or services performed to the date of termination. In no event will the amount due Contractor in the event of termination exceed that amount set forth in this Contract. Nothing contained herein shall prevent the County from pursuing any other remedy, which it may have against Contractor, including claims for damages.

10. Termination for Convenience. County may terminate this Contract for convenience at any time and without cause. Upon receipt of notice, Contractor shall immediately discontinue providing the work or service and, if applicable, placing any orders for any materials, facilities, and supplies in connection with the performance of the work or services of this Contract.

11. Non-waiver of Rights. The parties mutually agree that either party's failure to insist upon the strict performance of any provision of this Contract or to exercise any right based upon a breach thereof, or the acceptance of any performance during such breach, shall not constitute a waiver of any rights under this Contract.

12. Conflict of Interest. No paid employee of the County shall have a personal or financial interest, direct or indirect, as a contracting party or otherwise, in the performance of this Contract.

13. Subcontracts. The Contractor shall utilize no subcontractors for carrying out the services to be performed under this Contract without the written approval of the County.

14. Entire Contract. This Contract constitutes the entire understanding of the parties.

15. Binding Effect. This Contract shall be binding upon the parties hereto, and their heirs, successors, executors, administrators and assigns.

16. Further Actions. The parties will make and execute all further instruments and documents required to carry out the purposes and intent of this Contract.

17. Severability. If any provision of this Contract is held unenforceable, then such provision will be modified to reflect the parties' intention. All remaining provisions of this Contract shall remain in full force and effect.

18. Inclusive Terms. Use of the masculine herein shall include the feminine and neuter, and the singular shall include the plural.

19. Governing Law. All of the terms and conditions contained herein shall be interpreted in accordance with the laws of the State of North Carolina.

20. E-Verify Compliance. Pursuant to N.C.G.S. § 143-48.5 (Session Law 2015-418), Contractor shall fully comply and certify compliance of each of its subcontractors with Article 2 of Chapter 64 of the N.C. General Statutes, including the requirement for each employer with more than 25 employees in North Carolina to verify the work authorization of its employees through the federal E-Verify system. County shall be provided affidavits attesting to Contractor's and subcontractor's compliance or exemption. Violation of the provision, unless timely cured, shall constitute a breach of Contract.

21. Accounting Procedures for Refund of County Sales & Use Tax. Pursuant to G.S. 105-164.14(c), the County is entitled to a refund of sales and/or use taxes paid by contractors on purchases of building materials, supplies, fixtures and equipment that become a part of or are annexed to any building or structure that is owned or leased by the County and is being erected, altered or repaired for use by the County.

Contractors shall provide a "certified statement" containing the specific required information. The certified statement must include all of the following information:

- a. the date the property was purchased;
- b. the type of property purchased;
- c. the cost of property purchased and the amount of sales and use taxes paid thereon;

- d. the project for which the property was used;
- e. if the property was purchased in this State, the county to which it was delivered; and
- f. if the property was not purchased in this State, the county in which the property was used.

If the contractor makes several purchases from the same vendor, the certified statement must indicate each invoice number, the inclusive dates of the invoices, the total amount each invoice, and the state and local sales and use taxes paid on the purchase. The statement must also include the cost of any tangible personal property withdrawn from the contractor's warehouse stock and the amount of state and local sales or use tax paid by the contractor. If subcontractors are used, similar certified statements by its subcontractors must be obtained by the general contractor and furnished to the County. Local sales or use taxes included in the contractor's statements must be shown separately from the State sales or use taxes. The contractor's statements must not contain sales or use taxes paid on purchases of tangible personal property purchased by the contractor for use in performing the contract which does not annex to, affix to or in some manner become a part of the building or structure that is owned or leased by the County and is being erected, altered or repaired for use by the County.

Examples of property on which sales or use tax has been paid by the contractor and which shall not be included in the contractor's statement are scaffolding, forms for concrete, fuel for the operation of machinery and equipment, tools, equipment, equipment repair parts and equipment rentals.

A certified statement must be provided with each pay request. If there was no sales or use tax paid during the period, the contractor shall provide a "Zero" sales and use tax statement.

22. Notices. All notices required hereunder to be sent to either party shall be sent to the following designated addresses, or to such other address or addresses as may hereafter be designated by either party by mailing of written notice of such change of address, by Certified Mail, Return Receipt Requested:

To County:
New Hanover County Environmental Management
Attention: Kim Roane, Business Officer
3002 U.S. Hwy 421 North
Wilmington, NC 28401

To Contractor:

23. Assignability. The parties hereto agree that this Contract is not transferable and shall not be assigned by either party without the written consent of the other party to this Contract.

24. Contract Under Seal. The parties hereto expressly agree to create a Contract under seal.

IN WITNESS WHEREOF, the parties have hereunto affixed their hands and seals, the day and year first above written and by authority duly given.

[SEAL] NEW HANOVER COUNTY

_____ County Manager

ATTEST:

Clerk to the Board

CONTRACTOR

President (Seal)

[CORPORATE SEAL]

ATTEST:

Secretary

This instrument has been pre-audited in the manner required by the Local Government Budget and Fiscal Control Act.

Approved as to form:

County Finance Director

County Attorney

NORTH CAROLINA

NEW HANOVER COUNTY

I, _____, a Notary Public of the State and County aforesaid, certify that Sheila L. Schult acknowledged that she is Clerk to the Board of Commissioners of New Hanover County, and that by authority duly given and as the act of the Board, the foregoing instrument was signed in its name by its _____ County Manager, sealed with its corporate seal and attested by herself as its Clerk.

WITNESS my hand and official seal, this _____ day of _____, 2015.

Notary Public

My commission expires: _____

NORTH CAROLINA

NEW HANOVER COUNTY

I, _____, a Notary Public in and for the State and County aforesaid, certify _____, President of _____ personally came before me this day and the foregoing instrument was signed in its name as its name and sealed with its corporate seal.

WITNESS my hand and official seal, this _____ day of _____, 2015.

Notary Public

My commission expires: _____

STATE OF NORTH CAROLINA

AFFIDAVIT

COUNTY OF _____

I, _____ (hereinafter Affiant), being duly authorized by and on behalf of _____ (hereinafter "Employer") after first being duly sworn hereby swears or affirms as follows:

- 1. Employer understands that E-Verify is the federal E-Verify program operated by the United States Department of Homeland Security and other federal agencies, or any successor or equivalent program used to verify the work authorization of newly hired employees pursuant to federal law in accordance with NCGS §64-25(5).
- 2. Employer understands that Employers Must Use E-Verify. Each employer, after hiring an employee to work in the United States, shall verify the work authorization of the employee through E-Verify in accordance with NCGS§64-26(a).
- 3. Employer is a person, business entity, or other organization that transacts business in this State and that employs 25 or more employees in this State. **(Mark Yes or No)**
 - a. YES _____, or
 - b. NO _____
- 4. Employer's subcontractors must comply with E-Verify and Employer will ensure compliance with E-Verify by any subcontractors subsequently hired.

This ____ day of _____, 2015.

Signature of Affiant

Print or Type Name: _____

State of North Carolina County of _____

Signed and sworn to (or affirmed) before me, this the ____ day of _____, 2015.

My Commission Expires: _____

Notary Public

(Affix Official/Notarial Seal)



NEW HANOVER COUNTY



DEPARTMENT OF ENVIRONMENTAL MANAGEMENT

SAFETY MANAGEMENT & HEALTH MANUAL

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STATEMENT OF MANAGEMENT SUPPORT

The basic safety objective of the Department of Environmental Management is to insure that no job is so important that we cannot perform it in a safe manner. The safety of our employees is the responsibility of Management. Management at all levels has the responsibility for the administration and implementation of a safety program that will achieve successful results.

In order to assist you in the development of a strong safety program, this Safety Manual has been developed. It is provided to you for utilization in meeting these minimum requirements as stated by the various procedures.

As stated in our Departmental Safety Policy, we are convinced that safety has the highest priority. It is expected that a high level of safety performance will be obtained at all locations and the department will have an outstanding safety program and record.

Director
New Hanover County
Department of Environmental Management

DEPARTMENT SAFETY POLICY

SAFETY POLICIES AND PROCEDURES

The Safety Policies and Procedures Plans summarize information regarding safety policies and procedures for the New Hanover County, Department of Environmental Management and are maintained in the Departmental Safety Office.

GENERAL COMPANY SAFETY PHILOSOPHY STATEMENT

Safety first is the responsibility of every DEM employee and this philosophy reflects the proactive safety attitude maintained every day at this company.

DEM will comply with appropriate safety and security laws and regulations such as those established by:

- The Occupational Safety and Health Act (OSHA),
- The EPA (Environmental Protection Agency), and
- The NFPA (National Fire Protection Association),
- Other applicable federal, state, and local safety and health regulations.

The DEM corporate safety philosophy includes the following vision statements:

- The department will comply with appropriate safety and security laws and regulations such as those established by OSHA, EPA, DOT, and all other applicable federal, state, and local safety and health regulations.
- We believe that the safety of employees is of utmost importance, along with quality, production, and cost-control. Maintenance of safe operating procedures at all times is of both monetary and human value, with the human value being far greater to the employer, the employee, and the community. The following principles support this philosophy:
- Injuries and accidents are preventable through and compliance with safe work procedures.
- The prevention of bodily injury and safeguarding of health are the first considerations in all workplace actions and are the responsibility of every employee at every level.

accident or work-related health problem occurs in their department.

- Equipment and property within their area of responsibility is maintained in a safe, hazard-free condition.

Employee's have a responsibility to follow all safety rules, work safely at all times, and are required to:

- Comply with all federal, state, and local rules and regulations relevant to their work.
- Observe all company rules and regulations related to the efficient and safe performance of their work.
- Integrate safety into each job function and live by this philosophy in the performance of job duties.
- Report or correct unsafe equipment and practices.
- Report any accidents that occur while on the job.

DISCIPLINARY POLICY

Safety rules, procedures, and plans in effect at DEM are intended to be followed. Employees violating departmental safety policies (including physician directed duty restrictions) may be subject to disciplinary action up to and including termination.

Departmental Supervisors are charged with the implementation of eight major safety responsibilities. They are:

1. Motivation of employees to be safety conscious both on and off the job.
2. Training of employees to be more productive under established safety guidelines.
3. Inspection of work areas to identify and correct safety hazards and potential safety problems.
4. Immediate investigation of accidents to determine cause and subsequent corrective action.
5. Support of company safety goals and objectives.
6. Employee suggestion procedures and involvement.

7. Strong base of managerial, supervisory, and employee resources.
8. Constant review and evaluation.

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NAME	TITLE	DATE

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REVISION	DATE	SECTIONS	REASON

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EMERGENCY REPORTING PROCEDURES

In the occurrence of an emergency, any employee involved in the reporting of the incident will follow these procedures to obtain aid for victims:

1. Call the control room; identify yourself and the supervisor you work for.
2. Describe the situation and type of aid required.
3. Give exact location of the incident so aid can be properly dispatched.
4. The control room will call for an ambulance, if required, and dispatch personnel to the main gate for ambulance direction.
5. Any person who requests assistance should stay with the victim until emergency personnel arrives.

MEANS OF EGRESS

If an emergency arises, such as fire, bomb threat, a toxic gas release, or other life threatening occurrence and evacuation is necessary, the following procedures shall be initiated:

1. Contact the Control Room. They will make the following announcement:

**ALL PERSONNEL EVACUATE THE MAIN PLANT, or selected area.
AVOID THE AREA, REPORT TO THE PLANT RALLY POINT.**

2. When the announcement has been made, all employees will leave the plant through the primary egress exits.
 - USE STAIRWAYS ONLY
 - WALK- DO NOT RUN
 - DO NOT DETOUR TO RETRIEVE PERSONAL ITEMS
3. When safely outside the plant, all employees will go straight to the Rally Point in front of the administration office.
4. No employee is permitted to re-enter or allow other employees to re-enter the facility without authorization from the Shift Supervisor.
5. The Shift Supervisor will take role. Any missing persons will be reported to the emergency coordinator.

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Department of Environmental Management

In-House Phone List

Administration

Name	Title	Extension	Cell
Joe Suleyman	Director	4403	262-0679
Kim Roane	Business Officer	4402	540-6525
Becky Breen	Administrative Specialist	4405	471-6926

Recycling

Name	Title	Extension	Cell
Lynn Bestul	Solid Waste Planner	4410	619-5697
Jim Thomas	Recycling Supervisor	4407	619-3478
Gary Moore	Recycling Operator	4415	619-3068

Household Hazardous Waste

Name	Title	Extension	Cell
Tish Vincent	Household Hazardous Waste Coordinator	4406	297-0834
Jeff Hartsell	Programs Assistant	4400	704-361-8435

Landfill

Name	Title	Extension	Cell
Sam Hawes	Landfill Manager	4454	386-1163
Andy Mulvey	Environmental Specialist	4453	508-2960
Kevin Woodward	Environmental Technician	4458	622-4848
Scalehouse		4451	798-4451

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MEDIA RELATIONS

All inquires by the media or others should be referred to the New Hanover County Public Information Officer, Mark Boyer, 910-798-7493

If you are forced to give a response please state,

“ The incident is under investigation and no further information is available at this time.”

Environmental Management Personnel shall not:

- Notify OSHA (Safety Officer will perform this function.)
- Discuss the incident with the media.
- Discuss the incident with anyone outside of NHC Environmental Management.

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NEW HANOVER COUNTY INTER-OFFICE

MEMO

July 18, 2006

To: WASTECC Managers and Supervisors

From: Al Canady, Plant Manager, WASTECC

Re: Accident Reporting Procedures

EMPLOYEE WORK INJURY REPORTING PROCEDURES

Initial Reporting

In the event of a personal injury occurring during work activities, the injured employee is to report the injury immediately to his/her supervisor, regardless of the severity of the injury. If the supervisor is not available, employees shall immediately contact the Department Safety Officer at 798-4414 or by cell phone 910-619-6840. If neither are available, contact your manager.

Should the injury be non-life threatening but require medical attention, and occurring during the hours of 8:00 am - 8:00 pm, the supervisor shall call either MEDAC I, MEDAC II, or MEDAC III advise them of the nature of the injury and inquire as to whether the employee should be immediately seen for treatment or a later appointment scheduled.

Should the injury be non-life threatening but require medical attention, and occurring after 8:00 pm, the supervisor shall call New Hanover Regional Medical Center's Emergency Department at 343-7919, and advise them of the nature of the injury and inquire as to their recommended course of action for treatment.

Should the injury require immediate medical attention, the injured employee shall be transported for medical treatment by a designated management representative or emergency rescue as necessary. The management representative will remain with the injured employee until services are provided by appropriate medical personnel and the employee is released, or admitted for further attention.

If the employee is released and cannot immediately return to work, the management representative may assist the employee in securing transportation to his/her residence, including providing the transportation, if necessary.

The management representative shall make every effort to obtain from attending medical professionals the following limited information:

1. The nature of the injury
2. The employee's ability to return to work
3. The extent, and limitations of any work restrictions

A courtesy form will be provided for this purpose by WASTECC. *** This form is only necessary when an employee goes to New Hanover Regional Medical Center's Emergency Department.**

If an employee is injured during work activities and is not immediately transported to the medical center for treatment, but elects to continue and end his/her normal work shift and subsequently elects to request medical treatment, the following procedure will apply:

- 1.) *The employee will contact his/her immediate supervisor to advise them of the condition.
- 2.) The employee shall be directed to the nearest medical facility for treatment and directed to have attending medical personnel complete the "Employee Injury" form (if being treated at New Hanover Regional Medical Center). The employee shall make this completed form available to DEM management the following day.
- 3.) The employee will follow the procedures for absence notification and return to work as outlined under "EMPLOYEE ILLNESS REPORTING PROCEDURE."

* In life threatening situations, the employee should immediately notify emergency rescue personnel for transportation to a medical facility.

MEDAC I
3710 Shipyard Boulevard
Wilmington, NC 28403
910/791-0075

MEDAC II
1442 Military Cutoff Road
Wilmington, NC 28403
910/256-6088

MEDAC III
8115 Market Street
Wilmington, NC 28403
910/686-1972

MEDAC Hours are 8 AM to 8 PM including Saturday Sundays and Holidays

NEW HANOVER COUNTY INTER-OFFICE

MEMO

June 29, 2006

TO: **WASTEC Managers and Supervisors**

FROM: **Al Canady, Plant Manager**

RE: **Employees Illness Reporting Procedure**

This is a reiteration of the illness reporting procedure. It has been separated from the accident reporting procedure because of changes to that procedure. The accident reporting procedure is being distributed separately. Please ensure that your employees read and understand this policy.

Initial Reporting

Employees shall contact their immediate supervisor as soon as possible prior to the beginning of their scheduled work shift when reporting in as sick.

If the supervisor is not available, employees shall contact the shift supervisor in the control room at 798-4443 prior to the beginning of their scheduled work shift to report their absence and expected date of return. In such cases, employees shall also contact their immediate supervisor within 30 minutes after starting the normal scheduled work shift to advise them of the absence and expected date of return.

Time Sheets

The following method for filling out time sheets for injury or illness is in effect.

Sick leave will be as follows:

Hours an employee is not at work should he/she become ill during normal work shift and does not complete the normal work shift.

Hours an employee does not work on days subsequent to the above injury or illness (until worker's compensation becomes effective), unless the employee elects to enter into a leave without pay (LWOP) status.

Hours an employee is not at work after calling in sick.

Hours an employee is not at work for scheduled, personal, required physical or dental treatment.

Hours an employee is not at work due to exposure to a contagious disease that might jeopardize the health of others.

Hours an employee is not at work for sickness or injury to immediate family members requiring the employee's assistance (immediate family members is defined in the county personal procedures).

NOTE: Personal leave can be substituted by an individual for sick leave but sick leave may not be used for personal leave.

Should an employee report an injury to a supervisor, who subsequently provides the employee transportation to a physician to be checked under workers' compensation, and the employee returns to work immediately after being checked, the time will be shown as a normal workday on the time sheets.

After Initial Day

Unless otherwise stated by the employee's immediate supervisor, employees shall contact their supervisor during their normal scheduled work shift to advise them of their continued absence for each subsequent day.

Reporting Back to Work

Employees shall contact their immediate supervisor during their normal scheduled work shift on the day prior to their return to inform supervisor as to their intent to return to work. If the supervisor is not available, employee shall immediately contact the shift supervisor in the control room at 798-4443 prior to the beginning of their normal scheduled work shift to report the time and date of their return to work.

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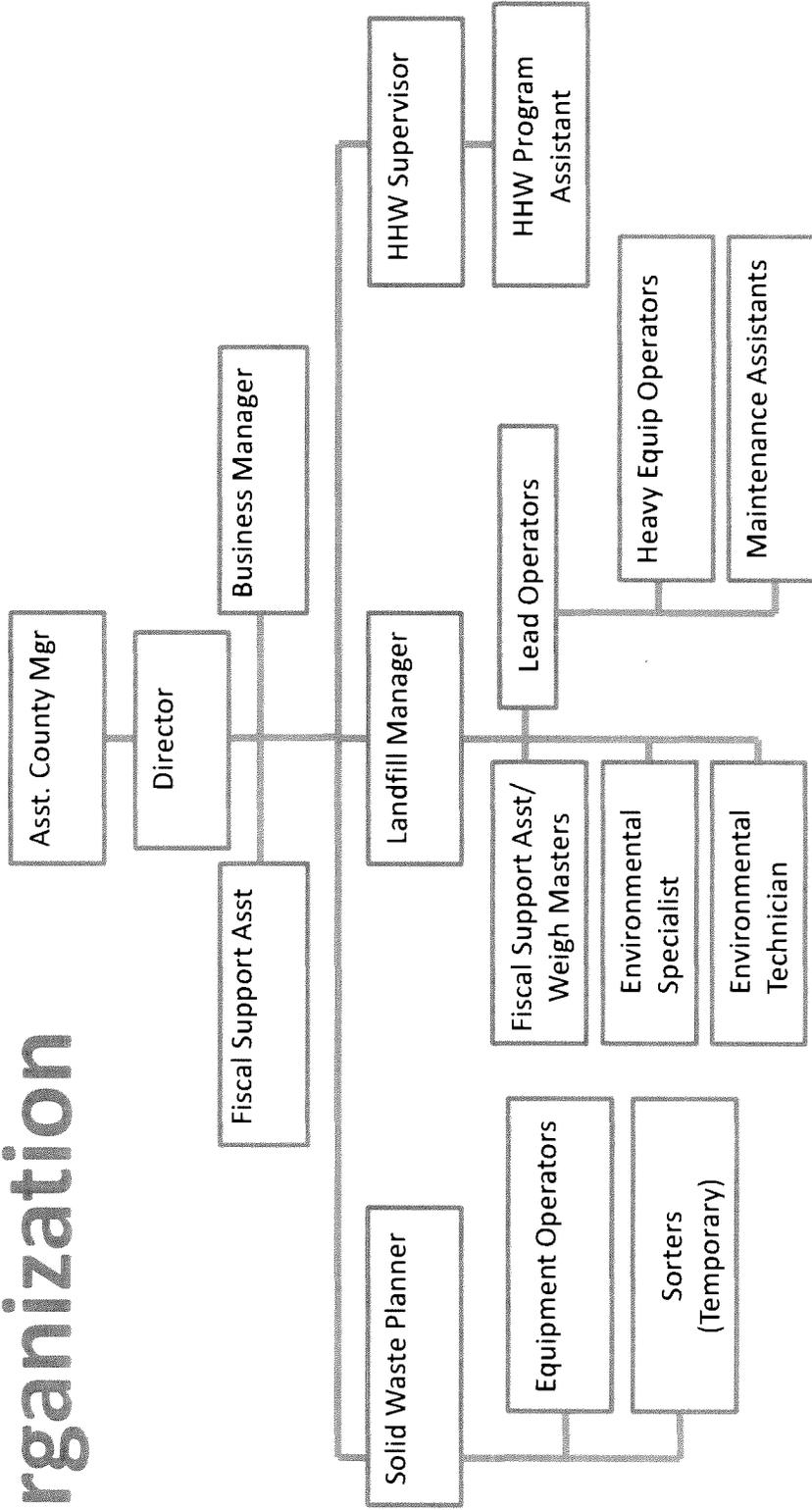
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SAFETY COMMITTEE

The purpose of the Department Safety Committee is to conduct monthly meetings to:

- Review all accidents and make recommendations to prevent recurrence.
- Review current safety problems with recommendations for improvements.
- Discuss current safety performance and related cost.
- Ensure a plan for inspection of work centers for housekeeping, safe practices and safety hazards; with a written report of findings and recommendations accomplished and reviewed monthly.
- Review all pending committee recommendations so the status of each item is known. If a recommendation is not economically feasible and a suitable alternative is not available, inform the committee and remove the item from the agenda.
- Review and evaluate all training techniques for specific safety programs and procedures.

The Safety Committee Chairman is responsible for conducting the meeting to cover the areas outlined above. A meeting agenda should be prepared prior to the meeting. Standard agenda items will include the following:

- Review of all accidents for the month including proposed recommendations for prevention of reoccurrence,
- Worker's Compensation issues,
- Training plans and procedures,
- Pending Items with status of each noted,
- List of current safety items on which the committee should act with complete prior investigation and proposed recommendations,
- Other safety items (Employee suggestions).

Concise minutes should be prepared by the recorder after each meeting and distributed throughout the department.

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RESTRICTED WORK DUTY GUIDELINES

The purpose of this guideline is to provide a uniform method for the implementation of restricted work duty for an employee with an occupational injury or illness. With implementation of a restricted work duty program, there are several objective results which can be expected:

- Reduced employee time lost from work due to minor injuries or illness
- Injured employee returned to regular work assignment sooner
- Better control and monitoring of injured employee's condition
- Reduced Worker's Compensation cost.

The basis of such a procedure shall be to ensure that when an employee incurs a non-disabling occupational injury or illness, an attempt is made to see that the employee be given some form of productive work which the employee can adequately perform considering his/her injury or illness.

After it has been established that the injury or illness is occupational, the treating physician should decide as to possible restricted work duty status for the employee. The doctor may choose to place certain limitations on the restricted work duty. Some examples of such limitations are:

- No lifting greater than 25 pounds
- No prolonged standing
- No climbing of stairs or ladders
- No lifting over the head.

An employee may be allowed to work while wearing an arm or leg cast if the cast does not prevent the employee from working and/or does not create a safety hazard. Working while wearing a cast must be approved jointly by the doctor, and the head of the department where the employee will be working.

A periodic medical examination by the doctor for reevaluation of restricted work status may be required. Restricted work duty status is considered temporary and the release date of the restriction should be documented upon initiating the original restriction.

After the doctor has determined what restrictions shall apply, the Safety Officer shall coordinate with the employee's department head in finding suitable work for the employee. If the employee's department is unable to provide suitable work, then the employee's department head shall contact the Safety Officer to help in finding work for the employee. Every reasonable effort shall be made to find suitable productive work.

When an injured employee is being considered for restricted work duty, several questions should be asked to determine the availability of suitable work for the employee:

- If possible, can the employee do his normal job?
- Can the employee do a portion of his normal job with assistance?
- Can the employee do another job in the department other than his normal job?
- Is there a job or a work situation in the department which is not performed on a normal day- to-day basis but must be performed on occasion?
- Are there jobs that involve some minor repairs, inspection, or inventory?
- What about housekeeping, painting, sorting various items, etc.?

Any work that is assigned to the employee should be productive in nature. In instances when an employee has lost time due to an occupational injury or illness, every effort should be made to find productive work when the treating doctor authorizes the employee to return to some type of restricted work activity. Allowing the injured employee to return to some type of work can yield benefits, both from a rehabilitation and financial cost point of view.

Employees placed on restricted work duty should be treated as any other worker with regard to employees' lockers, entrances, and parking. Their presence in the department or job performance at work should in no way endanger themselves or others while working around them.

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OSHA COMPLIANCE REQUIREMENTS

The Occupational Safety and Health Act of 1970 is intended to ensure safe and healthful working conditions for American workers. This is accomplished by requiring employers to comply with specified safety and health standards and regulations, maintain certain records, and make certain report. The act is enforced through government inspections of workplaces along with citations, penalties, fines, and imprisonment for violations of the Act, its standards, or its regulations. The administration of the Act is a responsibility of the Occupational Safety and Health Administration (OSHA) under the United States Department of Labor.

The purpose of this instruction is to provide guidance to all personnel in dealing with OSHA requirements and activities. This includes management responsibilities, recordkeeping, reporting and posting requirements; safety and health inspections; citations; requests for variances, state OSHA plans, and other state and local requirements.

The manager at each location must be familiar with all OSHA requirements as they apply to his location and must ensure that such requirements are met. Copies of the publication entitled General Industry Standards are available in the Department Safety Office.

The basic recordkeeping, reporting, and posting requirements at each facility are as follows:

- **OSHA Form 200 - Log and Summary of Occupational Injuries and Illnesses:** This form must be maintained on a current basis and be retained locally for a period of five years at all facilities. Employees and employee representatives must be allowed access to this form upon request. For the information of employees, the last page of the form, showing injury and illness totals for the year, must be posted in a conspicuous place between February 1 and March 1 of the following year.
- **OSHA Form 19 - Supplementary Record of Occupational Injuries and Illnesses:** This form (or a substitute acceptable to OSHA) must also be maintained on a current basis and retained for a period of five years at all facilities. However, it should not be posted or made available to employees.
- **OSHA Form 200-S - Annual Occupational Injuries and Illness Survey:** This form is not required except when specifically requested by the government.
- **Special Records for Specific OSHA Standards:** In addition to the foregoing records and reports, certain special records must be maintained if

required by OSHA standards covering specific hazards or activities, e.g., crane inspections, etc.

- **Fatality and Multiple Hospitalization Reports:** In the event of any work-related accident resulting in the death of an employee and/or the hospitalization of five or more employees, Human Resources is required to notify the nearest OSHA office by telephone, telegram, or in person within 8 hours.
- **Job Safety and Health Protection Poster:** Each facility must display an OSHA poster entitled Job Safety and Health Protection in a prominent place to inform employees of their rights under the Act.

SAFETY AND HEALTH INSPECTIONS

Under the law, every company facility is subject to unannounced safety and health inspections by OSHA Compliance Officers. The facility shall handle such inspections as outlined below:

Admitting The Compliance Officer: Immediately upon arrival of the Compliance Officer, the manager at the facility, or his designed, shall take the following action:

Immediately contact the Departmental Safety Officer, by telephone and determine whether any special handling is applicable.

Greet the Compliance Officer, request to see his/her credentials, and determine the specific reason for the visit.

Do not admit persons other than authorized OSHA Compliance Officers' beyond the waiting rooms without first securing the approval of the Compliance Officers.

Opening Conference: The Safety Officer should conduct an opening conference with the Compliance Officer to determine the purpose, scope, and duration of the inspection. The manager should include appropriate management representatives in the opening conference. While the Compliance Officer may request employee representatives to attend the opening conference, their actual attendance is optional with management. In any case, the Compliance Officer has the right to conduct a separate opening conference with employee representatives.

Records Review: The Compliance Officer shall be permitted to examine any of the records specifically enumerated above if he so requests. However, no other records may be shown to the Compliance Officer without the specific approval by

the Director of Environmental Management.

Walk-Around Inspection: The manager shall designate a representative of management to accompany the Compliance Officer on the walk-around inspection. Also, if possible, a second management representative should be designated to assist in taking notes, photographs, and measurements, and in answering questions. In any event, the manager must also permit one or more representatives designated by the employees to take part in the walk-around inspection.

- During the walk-around inspection, the following instructions shall be observed. Make careful notes of:
 - Any favorable and unfavorable comments made by the Compliance Officer
 - Any apparent violations noted by the Compliance Officer
 - The name of any employee interviewed and, where possible, the questions asked and answers given
 - Any photographs taken by the Compliance Officer. If possible, the management representative should also take duplicate photographs
 - Any measurements and instrument readings taken by the Compliance Officer including the duration of any readings. Where possible, the management representative should also take and record measurements and readings simultaneously.

Closing Conference: The manager should conduct a closing conference with the Compliance Officer to discuss the results of the inspection and any alleged violations. Other appropriate management representative, particularly those most knowledgeable about OSHA standards and regulations, should attend the closing conference. The attendance of employee representative at the closing conference is optional with local management.

In the closing conference, the manager shall determine the following information:

- If the Compliance Officer intends to issue any citations.
- The specific standard or regulations pertinent to any alleged violation.
- The time to be allowed for abatement of any alleged violation or for compliance with any standard or regulation.
- During the closing conference the management representative should:

- Make no admission of any non-compliance.
- Sign no statements.
- Take complete notes of all matters discussed.
- Diplomatically attempt to prevent citations by such means as asserting a more appropriate interpretation of the standard in question, by explaining any standards existing at the facility that are equal or superior to the OSHA standards, by citing the actual historical safety and health experience of the facility relative to the standard, etc.
- Negotiate a sufficient amount of time for abatement of any alleged violation or for compliance with any standard or regulation.
- Request the Compliance Officer to direct all further communications concerning the inspection only to the Safety Officer.

Facility Report: Immediately following the inspection, the Safety Officer shall submit a complete written report of the inspection to the management staff. This report should include all significant information derived from the notes, observations, and documents developed in the items previously mentioned.

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NEW HANOVER COUNTY
DEPARTMENT OF ENVIRONMENTAL MANAGEMENT

Accident Investigation Written Program

In accordance with 29 CFR 1904

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1.0 PURPOSE

An accident reporting and investigation plan prescribes methods and practices for reporting and investigating accidents that can be read and understood by all managers, supervisors, and employees.

This written Accident Reporting and Investigation Plan is intended to demonstrate the Department of Environmental Management 's compliance with the requirements in 29 CFR 1904 by:

- Prescribing methods and practices for reporting and investigating accidents.
- Providing a means to deal with workplace accidents in a standardized way.

In addition, it is the policy of the Department of Environmental Management to comply with all workers' compensation laws and regulations.

The requirements of this plan apply to all operations within the Department of Environmental Management.

2.0 ADMINISTRATIVE DUTIES

The DEM Safety Officer is responsible for developing and maintaining this written Accident Reporting and Investigation Plan. This person is solely responsible for all facets of the plan and has full authority to make necessary decisions to ensure the success of this plan. The Safety Officer is also qualified, by appropriate training and experience that is commensurate with the complexity of the plan, to administer or oversee our accident reporting and investigation program and conduct the required evaluations.

This written Accident Reporting and Investigation Plan is kept at the following locations:

DEM Safety Office
WASTEC Control Room
DEM Administration Building
New Hanover County Landfill.

3.0 ACCIDENT REPORTING PROCEDURES

In the event of a personal injury occurring during work activities, the injured employee is to report the injury immediately to his/her supervisor, regardless of the severity of the injury. If the supervisor is not available, employees shall immediately contact the Department Safety Officer at x-4504. If neither are available, contact the on-shift supervisor or entity Manager.

Should the injury be non-life threatening but require medical attention, and occurring during the hours of 8:00 a.m. – 8:00 p.m., the supervisor shall call either MEDAC I or MEDAC II, advise them of the nature of the injury and inquire as to whether the employee should be immediately seen for treatment or a later appointment scheduled.

Should the injury be non-life threatening, but require medical attention, and occurring after 8:00 p.m., the supervisor shall call New Hanover Regional Medical Center's Emergency Department at 343-7919, and advise them of the nature of the injury and inquire as to their recommended course of action for treatment.

Should the injury require immediate medical attention, the injured employee shall be immediately transported for medical treatment by a designated management representative or emergency rescue as necessary. The management representative will remain with the injured employee until services are provided by appropriate medical personnel and the employee is released, or admitted for further attention.

If the employee is released and cannot immediately return to work, the management representative may assist the employee in securing transportation to his/her residence, including providing the transportation, if necessary.

The management representative shall make every effort to obtain from attending medical professionals the following limited information:

1. The nature of the injury
2. The employee's ability to return to work
3. The extent, and limitations of any work restrictions

A courtesy form will be provided for this purpose by DEM. **** This form is only necessary when an employee goes to New Hanover Regional Medical Center's Emergency Department or to a referred specialist. It can be found in the DEM accident investigation file.***

If an employee is injured during work activities and is not immediately transported to the medical center for treatment, but elects to continue and end his/her normal workshift and subsequently elects to request medical treatment, the following procedure will apply:

1. *The employee will contact his/her immediate supervisor to advise them of the condition. If the employee is unable to contact his/her supervisor, the employee shall contact the Department Safety Officer and advise him/her of the condition. If neither are available, contact the on-shift supervisor.

2. The employee shall be directed to the nearest medical facility for treatment and directed to have attending medical personnel complete the "Employee Injury" form (if being treated at New Hanover Regional Medical Center or referred specialist). The employee shall make this completed form available to DEM management the following day.
3. The employee will follow the procedures for absence notification and return to work as outlined under "EMPLOYEE ILLNESS REPORTING PROCEDURE."

* In life threatening situations, the employee should immediately notify emergency rescue personnel for transportation to a medical facility.

MEDAC I

3710 Shipyard Boulevard
Wilmington, NC 28403
(910) 791-9674

MEDAC II

1442 Military Cutoff Road
Wilmington, NC 28403
(910) 256-6089

After medical attention has been secured for the injured party begin completed the accident investigation file.

4.0 ACCIDENT INVESTIGATION PROCEDURES

Thorough investigation of all accidents will lead to identification of accident causes and help:

- Reduce economic losses from injuries and lost productive time;
- Determine why accidents occur, where they happen, and any trends that might be developing;
- Employees develop an awareness of workplace problems and hazards;
- Identify areas for process improvement to increase safety and productivity;
- Note areas where training information or methods need to be improved; and
- Suggest a focus for safety program development.

For all accident investigations, the accident investigation team will perform the following duties:

- Conduct the accident investigation at the scene of the injury as soon after the injury as safely possible.
- Ask the employee involved in the accident and any witnesses, in separate interviews, to tell in their own words exactly what happened.
- Repeat the employee's version of the event back to him/her and allow the

employee to make any corrections or additions.

- After the employee has given his/her description of the event, ask appropriate questions that focus on causes.
- When finished, remind the employee the investigation was to determine the cause and possible corrective action that can eliminate the cause(s) of the accident.
- Complete an accident investigation report with the employee and review data with employee for accuracy. This will provide information to put into database format.

The accident investigation report is used to:

- Track and report injuries on a monthly basis.
- Group injuries by type, cause, body part affected, time of day, and process involved.
- Determine if any trends in injury occurrence exist and graph those trends if possible.
- Identify any equipment, materials, or environmental factors that seem to be commonly involved in injury incidents.
- Discuss the possible solutions to the problems identified with the safety team and superiors.
- Proceed with improvements to reduce the likelihood of future injuries.

5.0 INJURY/MEDICAL ISSUES

If a workplace accident results in injury or illness requiring hospitalization of three or more employees or a fatality of one or more employee, Safety Officer or Shift Supervisor shall report the incident within eight hours by phone or in person to the nearest OSHA office, at (800) 321-6742. Before the phone call is made the 29 CFR 1904.8 OSHA Fatality/Catastrophe report should be completed.

Before an injured person is taken to a doctor, the Safety Officer or Shift Supervisor shall contact MEDAC at (910) 791-9674 or (910) 256-6089 and inform the clinic of the following:

- Who you are.
- Where you are calling from.

- Name of injured employee.
- Any special precautions that need to take place while transporting the employee.

Employees with workplace injuries resulting in restricted duty will be put in the department's Light-Duty Program (see Appendix B).

6.0 RECORDKEEPING

Safety Officer is responsible for maintaining the following records and documentation:

- **OSHA 200 log of injuries and illnesses**
- Accident investigation reports
- Training records
- DEM Safety METRICS

7.0 TRAINING

This plan is an internal document guiding the action and behaviors of employees, so they need to know about it. To communicate the new accident reporting and investigation plan, all employees are given a thorough explanation as to why the new plan was prepared and how individuals may be affected by it.

8.0 PROGRAM EVALUATION

The accident reporting and investigation program is evaluated and updated by the DEM Safety Officer according to the following schedule to determine whether the plan is being followed and if further training may be necessary:

- Quarterly, after the program has been implemented.
- Yearly, thereafter.

9.0 APPENDICES

The following appendix is attached to ensure a better understanding of this plan:

- Accident Investigation Reporting File Locations
- DEM Light Duty Return-to-Work Program
- Sample Accident Investigation Reporting File

APPENDIX A

ACCIDENT INVESTIGATION FILE LOCATIONS

The following should have at least one DEM accident investigation file:

- DEM Safety Officer
- Materials Manager
- Maintenance Manager
- A Shift Supervisor
- B Shift Supervisor
- C Shift Supervisor
- D Shift Supervisor
- Relief Shift Supervisor
- DEM Administrative Assistant
- Environmental Programs Manager
- Solid Waste Planner
- Landfill Manager

APPENDIX B

RESTRICTED WORK DUTY GUIDELINES

The purpose of this guideline is to provide a uniform method for the implementation of restricted work duty for an employee with an occupational injury or illness. With implementation of a restricted work duty program, there are several objective results which can be expected:

- Reduced employee time lost from work due to minor injuries or illness
- Injured employee returned to regular work assignment sooner
- Better control and monitoring of injured employee's condition
- Reduced Worker's Compensation cost.

The basis of such a procedure shall be to ensure that when an employee incurs a non-disabling occupational injury or illness, an attempt is made to see that the employee be given some form of productive work which the employee can adequately perform considering his/her injury or illness.

After it has been established that the injury or illness is occupational, the treating physician should decide as to possible restricted work duty status for the employee. The doctor may choose to place certain limitations on the restricted work duty. Some examples of such limitations are:

- No lifting greater than 25 pounds
- No prolonged standing
- No climbing of stairs or ladders
- No lifting over the head.

An employee may be allowed to work while wearing an arm or leg cast if the cast does not prevent the employee from working and/or does not create a safety hazard. Working while wearing a cast must be approved jointly by the doctor, and the head of the department where the employee will be working.

A periodic medical examination by the doctor for reevaluation of restricted work status may be required. Restricted work duty status is considered temporary and the release date of the restriction should be documented upon initiating the original restriction.

After the doctor has determined what restrictions shall apply, the Safety Officer shall coordinate with the employee's department head in finding suitable work for the employee. If the employee's department is unable to provide suitable work, then the employee's department head shall contact the Safety Officer to help in finding work for the employee. Every reasonable effort shall be made to find suitable productive work.

When an injured employee is being considered for restricted work duty, several questions should be asked to determine the availability of suitable work for the employee:

- If possible, can the employee do his normal job?
- Can the employee do a portion of his normal job with assistance?
- Can the employee do another job in the department other than his normal job?
- Is there a job or a work situation in the department which is not performed on a normal day- to-day basis but must be performed on occasion?
- Are there jobs that involve some minor repairs, inspection, or inventory?
- What about housekeeping, painting, sorting various items, etc.?

Any work that is assigned to the employee should be productive in nature. In instances when an employee has lost time due to an occupational injury or illness, every effort should be made to find productive work when the treating doctor authorizes the employee to return to some type of restricted work activity. Allowing the injured employee to return to some type of work can yield benefits, both from a rehabilitation and financial cost point of view.

Employees placed on restricted work duty should be treated as any other worker with regard to employees' lockers, entrances, and parking. Their presence in the department or job performance at work should in no way endanger themselves or others while working around them.

APPROVED BY:

NAME	TITLE	DATE

REVISION HISTORY:

REVISION	DATE	SECTIONS	REASON

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NEW HANOVER COUNTY
DEPARTMENT OF ENVIRONMENTAL MANAGEMENT

**Specifications for Safety Color Code for Marking
Physical Hazards and Accident Prevention Signs and
Tags Written Program**

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1.0 INTRODUCTION

Workplace hazards need to be marked to alert employees to the dangers that exist in a facility or area. To provide uniformity and wording among organizations and industry, the American National Standards Institute (ANSI) has designed color schemes and sizes for marking hazards. The color code identifies the type of hazards, which helps the employee identify the level of severity. It is meant to reduce the possibility of injuries. OSHA outlines the color code for marking physical hazards in 29 CFR 1910.144. In areas where OSHA does not cite specific requirements, the ANSI standard is followed. The following chart represents the color codes of both ANSI (Z535.1-1998) and OSHA.

COLOR	MEANING	APPLICATION
Red	Danger	<ul style="list-style-type: none"> • Safety cans, signs
Red	Stop	<ul style="list-style-type: none"> • Emergency stop bar or button on machinery
Red	Fire	<ul style="list-style-type: none"> • Identification of fire equipment.
Fluorescent Orange, Orange-Red	Biosafety	<ul style="list-style-type: none"> • Labels and containers for blood and infectious waste. Warning labels must be fluorescent orange or orange-red with the biosafety symbol in a contrasting color).
Yellow	Caution	<ul style="list-style-type: none"> • Tripping, falling and striking hazards. • "Flammable", "Keep Fire Away" labels on cabinets. • Safety cans, containers for explosives, corrosives or unstable materials.
Orange	Warning	<ul style="list-style-type: none"> • Parts of machinery or energized equipment that may cut, crush or otherwise injure. • Inside of transmission guards for pulleys, gears, etc.
Green	Safety	<ul style="list-style-type: none"> • Location of first aid equipment.

		<ul style="list-style-type: none"> • Location of safety equipment; showers, respirators, etc.
Blue	Information	<ul style="list-style-type: none"> • Signs, bulletin boards. • Specific railroad warnings against starting, using or moving equipment being repaired.
Black, White, Yellow or combination or Black, with White or Yellow	Boundaries	<ul style="list-style-type: none"> • Traffic or housekeeping markings. • Stairways, directions and borders.
Magenta or purple on Yellow	Radiation Caution	<ul style="list-style-type: none"> • X-ray, alpha, beta, gamma, neutron and proton radiation.

Basic Definitions:

Danger – Indicate an immediately hazardous situation which, if not avoided, will result in death or serious injury. Placed in letters to be read and understood in all languages.

2. **Caution** – Indicate a potentially hazardous situation which, if not avoided, may result in minor or moderate injury. Caution may also be used to alert against unsafe practices.
3. **Warning** – Indicate a potentially hazardous situation which, if not avoided, may result in death or serious injury.
4. **Biological hazard or “BIOHAZARD”** – means those infectious agents presenting a risk of death, injury or illness to employees.

2.0 MARKING OF HAZARDS

Several regulations refer to markings depending on the situation. The following are common situations where signage is needed.

- Compressed Gas Cylinders
- Confined Spaces
- Exits
- Eyewash/Shower Stations
- Hazardous Chemicals

- Hazardous Wastes
- High Voltage
- Ladders
- Lockout/Tagout
- Machine Guards
- Permanent Aisles and Passageways
- Pipe Markings
- Welding, Cutting, and Brazing
- Washing Down Boilers
- Construction
- Overhead Work
- Floor Holes or Openings
- Excavations
- Scaffolding
- Fall hazards of flat roofs
- Whenever necessary to warn people of falling or tripping hazards.

3.0 PLACEMENT OF SIGNS

ANSI rules for placement of signs are:

1. Signs must be placed to alert and inform employees of hazards in sufficient time to avoid the hazard and take appropriate action. Employees should not be in harm's way before seeing the sign.
2. Signs must be placed so that they are legible, do not create a distraction, and are not hazards in themselves.
3. Signs must not be placed on moveable objects or adjacent to movable objects like doors, windows, etc., which if moved will obscure the sign.
4. Where illumination may be necessary under emergency conditions, the signs should be equipped with emergency (battery operated) illumination or be reflective or both.
5. Barricades shall be about 42 inches high (standard top rail).
6. Warning barricades should be placed approximately 6 feet or more away from the hazard.

4.0 DEPARTMENTAL RULES CONCERNING BARRICADES

- A **RED DANGER** barricade means no employee shall enter the barricaded area (i.e. overhead crane work).

- A barricade means only authorized personnel shall enter the barricaded area (examples include, scaffolding projects, confined spaces, accident investigation, and welding/cutting projects).

5.0 LOCATIONS OF BARRICADE TAPE

Barricade tape shall be stored in the following locations:

- Materials Building
- Control Room
- Instrument Shop
- Maintenance Shop
- Landfill

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NEW HANOVER COUNTY
DEPARTMENT OF ENVIRONMENTAL MANAGEMENT

Bloodborne Pathogens Written Program

In accordance with 29 CFR 1910.1030 Bloodborne Pathogens Standard

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1.0 SCOPE AND APPLICATION

1.1. Introduction

The Department of Environmental Management's service to the County and County residents may entail Department employees potentially being exposed to blood or other potentially infectious materials (PIMs) during the course of their work activities.

While the Department has historically been committed to employee safety and health, the federal government has issued regulations specifically addressing reasonably anticipated skin, eye, mucous membrane, or parenteral contact with blood or other potentially infectious materials that may result from the performance of an employees duties. The Bloodborne Pathogens regulation issued by the Occupational Safety and Health Administration applies to all occupational exposure to blood or other potentially infectious materials. New Hanover County has developed a Bloodborne Pathogens Program for compliance with the Bloodborne Pathogens regulation. This addendum addresses specific operational requirements and procedures for Department of Environmental Management employees.

The overall effectiveness of the Department Bloodborne Pathogens Program depends upon the active support, cooperation and involvement of all affected employees.

1.2 Purpose

The purpose of this program is to protect employees from the hazards of exposure to Bloodborne Pathogens and other potential infectious materials in the workplace. In addition, this program is a requirement of OSHA's Bloodborne Pathogens Standard (29 CFR 1910.1030), which requires that a written Exposure Control Plan be prepared and maintained in each workplace containing at least the following elements:

- Exposure Determination
- Methods of Compliance
- Hepatitis B Vaccination and Post-Exposure Evaluation and Follow-up
- Communication of Hazards to Employees
- Record keeping
- The procedures for the evaluation of circumstances surrounding exposure incidents.

1.3 Application

This program applies to the following departmental employees having potential exposure to blood or other potentially infectious materials as defined below:

1.3.1 WASTEC Employees

- A. All Operations Section employees

B. All Maintenance Section employees to include I & C Technicians

1.3.2 Recycling

All Recycling employees

1.3.3 Landfill

All Landfill employees

2.0 DEFINITIONS

- **Blood** - Human blood, human blood components, and products made from human blood.
- **Contaminated** - The presence or the reasonably anticipated presence of blood or other potentially infectious materials on an item or surface.
- **Contaminated Sharps** - Any contaminated object that can penetrate the skin including, but not limited to, needles, scalpel, broken glass, broken capillary tubes, and exposed ends of dental wire.
- **Decontamination** - The use of physical or chemical means to remove, inactivate, or destroy Bloodborne Pathogens on a surface or item to the point where they are no longer capable of transmitting infectious particles and the surface or item is rendered safe for handling, use, or disposal.
- **Director** - The Director of the National Institute for Occupational Safety and Health, U.S. Department of Health and Human Services, or designated representative.
- **Engineering Controls** - Controls (e.g., sharps disposal containers, self-sheathing needles) that isolate or remove the Bloodborne Pathogen hazard from the workplace.
- **Exposure Incident** - A specific eye, mouth, other mucous membrane, non-intact skin, or parenteral contact with blood or other potentially infectious materials that results from the performance of an employees duties.
- **Hand Washing Facilities** - A facility providing an adequate supply of running potable water, soap, and single use towels, or hot air drying machines.
- **HBV** - Hepatitis B Virus
- **HIV** - Human Immunodeficiency Virus

- **Occupational Exposure** - Reasonably anticipated skin, eye, mucous membrane, or parenteral contact with blood or other potentially infectious material that may result from the performance of an employee's duties.
- **Other Potentially Infectious Materials (PIMs)**
- The following human body fluids:
 - Semen, vaginal secretions, cerebrospinal fluid, synovial fluid, pleural fluid, pericardial fluid, peritoneal fluid, amniotic fluid, saliva in dental procedures, any body fluid that is visibly contaminated with blood, and all body fluids in situations where it is difficult or impossible to differentiate between body fluids.
 - Any unfixed tissue or organ (other than intact skin) from a human (living or dead).
 - HIV-containing cell or tissue cultures, organ cultures, and HIV or HBV-containing culture medium or other solutions; and blood, organs, or other tissues from experimental animals infected with HIV or HBV.
- **Parenteral** - Piercing mucous membranes or the skin barrier through such events as needle sticks, human bites, cuts, and abrasions.
- **Personal Protective Equipment** - Specialized clothing or equipment worn by an employee for protection against a hazard. General work clothes (e.g. uniforms, pants, shirts, or blouses) not intended to function as protection against a hazard are not considered to be personal protective equipment.
- **Regulated Waste** - Liquid or semi-liquid blood or other potentially infectious materials; contaminated items that would release blood or other potentially infectious materials in a liquid or semi-liquid state if compressed; items that are caked with dried blood or other potentially infectious materials and are capable of releasing these materials during handling; contaminated sharps, and pathological and microbiological wastes containing blood or other potentially infectious materials.
- **Universal Precautions** - Refers to an approach to infection control. According to the concept of Universal Precautions, all human blood and certain human body fluids are treated as if known to be infectious for HIV, HBV, and other Bloodborne Pathogens.
- **Work Practice Controls** - Controls that reduce the likelihood of exposure by altering the manner in which a task is performed (e.g., prohibiting recapping of needles by a two-handed technique).

3.0 EXPOSURE CONTROL PLAN

3.1 General Requirements

3.1.1 This procedure shall be reviewed and updated at least annually and whenever necessary to reflect new or modified tasks and procedures which affect occupational exposure and to reflect new or revised employee positions with occupational exposure.

3.1.2 The Safety Officer is responsible for the yearly review.

3.2 Exposure Determination

3.2.1 WASTEC Maintenance Unit personnel may be potentially exposed to PIMs while performing routine maintenance and repair activities on site equipment containing, or having been in contact with PIMs as a result of contaminated material entering the non-regulated waste stream.

3.2.2 WASTEC Operations Unit employees may be potentially exposed to PIMs while performing routine operational activities on site equipment containing, or having been in contact with PIMs as a result of contaminated material entering the non-regulated waste stream.

3.2.3 WASTEC Materials Unit employees may be potentially exposed to PIMs while performing material handling duties with forklifts, or other equipment containing, or having been in contact with PIMs as a result of contaminated material entering the non-regulated waste stream.

3.2.4 Recycling employees may be potentially exposed to PIMs as a result of handling waste glass, plastic, and paper products containing, or having been in contact with PIMs.

3.2.5 Landfill employees may be potentially exposed to PIMs as a result of handling or walking on refuse, or working with equipment, containing or having been in contact with PIMs.

3.3 Methods of Compliance

General Requirements - Universal Precautions shall be observed to prevent contact with blood and other PIM. Under circumstances in which differentiation between body fluid types is difficult or impossible, all body fluids shall be considered PIM. As it is also impossible to differentiate the types of waste entering the facility, all materials entering the facility from the waste stream shall be considered PIM. Employees shall minimize any potential contact with waste stream items whenever and wherever possible.

3.4 Engineering and Work Practice Controls

Employees working under this program shall, as applicable:

- 3.4.1** Wash hands with antiseptic soap or cleaner and water as soon as practicable following removal of gloves and other protective equipment.
- 3.4.2** Wash hands and any other skin with soap and water or flush mucous membranes with water as soon as practicable following eye, nose, or mouth contact with blood or other PIM. Immediately flush exposed mucous membranes with water and if exposed, flush eyes with large amounts of water or eye wash solution.
- 3.4.3** Refrain from walking on, through, or into waste stream products without appropriate personal protective equipment, and then only if required by the work activity.
- 3.4.4** Refrain from removing and reusing any products found in the waste stream unless required by your work activity.
- 3.4.5** Not eat, drink, smoke, apply cosmetics or lip balm or handle contact lenses in work areas where there is a reasonable likelihood of occupational exposure.
- 3.4.6** Perform all procedures involving blood or other PIM in such a manner as to minimize splashing, spraying, splattering, and generation of droplets of these substances.
- 3.4.7** Remove protective clothing penetrated with blood or other PIM as soon as practicable and place in red plastic or biohazard-labeled leakproof containers.
- 3.4.8** Where feasible, clean and decontaminate any equipment or work surfaces that have been in contact with blood or other PIM.

3.5 Personal Protective Equipment

General Requirements - Appropriate protective equipment to include gloves, protective coveralls, tyvek suits, goggles, face shields, masks, water repellent gear and boots shall be provided at no cost to personnel working in accordance with this program.

Employees working under this program shall, as applicable:

- 3.5.1** Wear cloth work gloves with polyethylene/vinyl/nitrile disposable glove inserts or other gloves which do not permit blood or other potentially

infectious materials to pass through to the skin when it can be reasonably anticipated that contact with blood, mucous membranes, non-intact skin or other PIM may occur.

- 3.5.2** If cloth gloves are worn they shall be placed in containers for laundering as soon as practicable after contact with blood, or other potentially infectious materials, mucous membranes, or non-intact skin, but no later than the end of the work shift.
- 3.5.3** Gloves that have been used for handling PIMs should not be used for handling equipment, opening doors, answering phones or handling reports.
- 3.5.4** Replace disposable, single use gloves as soon as practicable when contaminated, torn or punctured. These gloves shall be used only once.
- 3.5.5** Wear gloves when cleaning and decontaminating surfaces contaminated with blood or other PIM.
- 3.5.6** Wear full faceshields and eye protection (with side-shields) whenever splashes, spray, spatters, droplets or aerosols, of blood or other PIM may be generated and there is a potential for eye, nose or mouth contamination.
- 3.5.7** Wear protective coveralls or similar clothing if there is a potential for contact with blood or other PIM. In wet conditions, protective coveralls or similar clothing which does not permit blood or other potentially infectious material to pass through to the skin shall be worn where it can be reasonably anticipated that contact with blood, mucous membranes, non-intact skin or other PIM may occur.
- 3.5.8** Use pocket masks with one way valve, resuscitation bags, or other ventilation devices during CPR and rescue breathing. Pocket masks shall not be reused and shall be disposed of as biologically contaminated waste.
- 3.5.9** Personal protective equipment shall be repaired or replaced if unserviceable.

3.6 Housekeeping

General Requirements - As much as practical, work sites shall be maintained in a clean and sanitary condition.

At the WASTEC and Landfill facilities, Department of Corrections personnel shall be used to clean up any trash and debris escaping from

the normal waste stream flow. These clean-up operations shall be done on a weekly basis, or sooner as needed.

3.6.1 WASTEC

- A. Waste stream materials shall be closely compacted and isolated on the tipping floor using mechanical devices.
- B. The tipping floor shall be cleaned periodically throughout the day as necessary, using brushes mounted on the front of The Integrated Tool Carriers.
- C. Whenever materials from the waste stream are removed from an area or activity during maintenance, such materials shall be immediately disposed of in the proper manner.

3.6.2 Landfill

- A. All waste stream materials deposited in the landfill shall be covered with dirt or other appropriate material as expeditiously as practical.
- B. The area around the containers used for resident dumping shall be kept free of debris.
- C. The containers used for resident dumping shall not be used for garbage or materials contained in solid color waste bags.

3.6.3 Recycling

- A. Inspect and decontaminate on a regularly scheduled basis, all bins, pails, cans, and similar receptacles intended for re-use which may reasonably be expected to become contaminated with blood or other PIM. The receptacle should be cleaned and decontaminated as soon as practical after the discovery of visible contamination.
- B. Discard contaminated sharps as soon as practicable in containers that are: Closable, puncture resistance, leak proof on the sides and bottom, color coded in red or labeled with the biohazard symbol.
- C. Close sharps containers prior to removal or

replacement to prevent spillage or protrusion of contents during handling, storage, transport, or shipping.

- D. Place and package used sharps containers in an appropriate receptacle for disposal furnished by the contract disposal company.

3.7 Training

3.7.1 Employees shall receive training at the time of initial assignment and at least annually thereafter. Additional training shall be provided when changes such as modifications of tasks or procedures or institution of new tasks or procedures affect the employees occupational exposure.

3.7.2. Training records for Department employees shall be maintained by the Safety Officer. These records shall be kept for 3 years from the date of training and shall include:

- A. Name, Job title, and social security number of each employee attending the training session.
- B. The dates the training occurred.
- C. The name and qualifications of the instructor.
- D. The contents or a summary of the materials presented in the training program. The information in the training program shall be made available to the employees upon request.

EMERGENCY RESPONSE RULES

- 1) If an incident happens that requires First Aid and/or CPR/Rescue Breathing only those trained in such shall administer First Aid or CPR/ Rescue Breathing.
 - **First Aid** - Always wear appropriate PPE, including leak proof gloves and protective smock whenever there is the slightest risk of contacting blood or body fluids. If you choose to help an injured worker, focus on stopping the bleeding. Once the bleeding is under control, you do not need to give further assistance.
 - Call 911, if necessary.
 - Stay with the person.
 - Wait for emergency assistance to arrive.
 - **CPR/ Rescue Breathing** - Always use protective pocket masks with one-way valves during CPR and Rescue Breathing.
- *Always remember, if you are not trained in first aid, make as little contact as possible with the injured worker, and seek assistance immediately.*
- 2) After the worker(s) have been treated, initiate the infectious control plan.
- 3) Go to the nearest exposure control clean-up site and select the proper personal protective equipment (PPE). These sites are located in the control room and materials building.
- 4) Dress yourself in the following:
 - Class G or E Hard Hat.
 - One pair of latex gloves under one pair of leather gloves.
 - A disposable dust mask.
 - Safety glasses.
 - Polyethylene apron.
 - One pair of shoe covers.
- 5) After an employee is properly attired in PPE, begin the clean-up phase. The clean-up phase consists of the following:
 - A. Spray area liberally with Foam-O-Cide Germicidal Cleaner or Hypochlorite Solution.

- B. Allow 10 minutes for complete disinfection.
- B. Sprinkle layer of Unliquid Absorbent over affected area until completely covered.
- D. When liquid is congealed, scoop absorbed product into red bio-hazard bag(s).
- E. Repeat steps C and D until affected area is completely dry.
- F. Spray area liberally with Handi-Cide Disinfectant.
 - Put disposable items in red bag and tie it. Place the bio-hazard bag on the crane deck. Contact the crane operator and instruct him to immediately move bio-hazard bag into furnace hopper for disposal.
 - Disinfect reusable instruments/devices (Handi-Cide or Hypochlorite Solution).
 - Sanitize hands using Instant Hand Sanitizer.
 - Terminate the Incident
 - Inventory the Infectious Control Package.
 - **Contact Purchasing Manager for all replacement items.**

Common sense rules on how to protect yourself!

- Handle sharp items with care.
- Place sharp items in puncture resistant containers for disposal (Plastic Case)
- Wear proper personal protective equipment.
- Wash hands thoroughly and immediately after contamination with blood/ body fluids.
- Use ventilation devices and wear gloves for resuscitation purposes.
- Disinfect instruments/devices.
- Other contaminated items should be double bagged and treated as infectious waste.
- Spills of blood/body fluids should be cleaned up properly with a disinfectant.
- Label contaminated items/wastes prominently.

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NAME	TITLE	DATE
Sam Hawes	Landfill Manager	3/8/10

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1	9/12/13	Landfill	revised space list

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Sam Hawes	Landfill Manager	9/12/13
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Landfill	Departmental Safety Binder on Wall

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REFERENCES

North Carolina Occupational Safety and Health Standards for General Industry:
29 CFR 1910.146

1.0 PURPOSE

To provide a means by which employees will be protected from the hazards associated with entry into permit required confined spaces, and to develop procedures by which employees shall enter such spaces.

Landfill Management has determined that the workplace needs written procedures for the evaluation of confined spaces. Where permit-required spaces are identified, Management has developed and implemented a permit required confined space entry program. This program applies to all work operations at the landfill where employees must enter a permit-required confined space as part of their job duties.

The County Safety Officer has overall responsibility for coordinating safety and health programs at the landfill. The Landfill Manager has overall responsibility for the Permit-Required Confined Space Program. The Safety Officer, Landfill Manager, and the Landfill Documentation Review Committee will review and update the program as necessary. Copies of the program may be obtained from the Safety Officer or Landfill Manager.

Permit required confined spaces are identified and training is provided for all employees upon hire and annually thereafter. Employees receive instructions for safe entry into specific types of confined spaces, including atmospheric testing and monitoring, appropriate personal protective equipment, and Attendant, Entrant, and Supervisor responsibilities. The program is designed to ensure that safe work practices are utilized during all activities regarding the permit space to prevent personal injuries and illnesses that could occur.

To offer program improvement ideas, please contact the Safety Officer, Landfill Manager or the Landfill Documentation Review Committee. All suggestions are encouraged as the Landfill is committed to provide a safe workplace for all employees. A safe and effective permit required confined space entry program is an important component of our overall safety plan.

2.0 DEFINITIONS

Acceptable entry conditions - means the conditions that must exist in a permit space to allow entry and to ensure that employees involved with a permit-required confined space entry can safely enter into and work within the space.

department is unable to designate an Entry Supervisor, then the department shall coordinate work activities with the Safety Officer or their designee.

GFCI (Ground-fault circuit-interrupter) - is a device designed to disconnect an electric circuit when it seeks ground through a person or grounded object, thus preventing electric shock and fires.

Hazardous Atmosphere - means an atmosphere presenting a potential for death, disablement, injury, or acute illness from one or more of the following causes:

- A flammable gas, vapor or mist in excess of 10% of its' lower flammable limit (LFL)
- An oxygen deficient atmosphere containing less than 19.5% oxygen by volume or an oxygen enriched atmosphere containing more than 23.5% oxygen by volume
- Airborne combustible dust at a concentration that meets or exceeds its LFL (airborne combustible dust which obscures vision at five feet or less)
- An atmospheric concentration of any substance for which a dose or a permissible exposure limit is published in Subpart G, *Occupational Health and Environmental Control*, or in subpart Z, *Toxic and Hazardous Substances*, which could result in an employee exposure in excess of its dose or permissible exposure limit, and that could cause death, incapacitation, impairment of ability to self-rescue, injury or acute illness.
- Any other atmospheric condition that is immediately dangerous to life or health (IDLH).

Immediately dangerous to life or health (IDLH) - means any condition that poses an immediate or delayed threat to life or that would cause irreversible adverse health effects or that would interfere with an individual's ability to escape unaided from a permit space.

Lockout-tagout - means placing locks or tags on the energy isolating device (e.g. breaker boxes, control switches, valves, etc.) to prevent the unauthorized re-energization of the device or circuit while work is being performed by personnel. Tags shall indicate that the energy isolated device shall not be operated until the tag is removed by the individual(s) that installed the tag.

Non-Permit Space - confined space that does not contain any actual or potential hazards capable of causing death or serious physical harm.

Permit-required confined space - means a confined space that has one or more of the following characteristics:

- Contains or has the potential to contain a hazardous atmosphere;
- Contains a material that has the potential for engulfing an entrant;

All Landfill employees are authorized to work in or near permit spaces, with the exception of scalehouse personnel. All authorized Landfill employees are trained to be Entry Supervisors, Attendants and Entrants. Specific procedures (Appendix B) are followed when preparing, issuing, entering, and canceling entry permits. During the issuance of permits, the Entry Supervisor must completely fill out the permit form (Appendix C).

6.0 PRE-ENTRY EVALUATION

Prior to entry into a permit required confined space, the Entry Supervisor will monitor atmospheric and environmental conditions to ensure entry safety. Entrants and Attendants can observe the pre-entry evaluation and any subsequent testing. The authorized Entrant, Attendant, Supervisor, or employee authorized representative has the option of requesting a reevaluation of the space if they feel that the evaluation was not adequate. The Landfill follows the procedures to evaluate each permit space before entry according to 1910.146(c)(5)(ii)(C).

This includes testing the internal atmosphere with a calibrated direct-reading instrument for oxygen content, flammable gases and vapors, and the potential toxic air contaminants. After initial analysis, testing is conducted hourly to ensure that continuous ventilation is preventing the accumulation of a hazardous atmosphere. Readings are recorded on the confined space permit atmospheric log (Appendix D) where they are certified by signature of the Entry Supervisor.

The Entry Supervisor completes the entire permit before entry, ensuring that all safety equipment is available and all other safety concerns are addressed. Additionally, the Entry Supervisor ensures that all other permit forms are attached to the permit including the Attendant (Appendix E) and Entrant (Appendix F) Logs.

7.0 AUTHORIZED ENTRANTS

Employees who have completed the training and are authorized to enter permit spaces (authorized entrants) are assigned specific duties and responsibilities that they must perform when they work in the permit space.

In accordance to 29 CFR 1910.146(g) (1), training is provided so that all employees whose work is regulated by this rule acquire the understanding, knowledge, and skills necessary for the safe performance of the duties assigned under this rule. Duties of Entrants include:

1. Knowing the hazards that may be faced during entry, including information on the conditions, signs or symptoms, and consequences of the exposure.
2. Properly using equipment as required.
3. Communicating with the Attendant as necessary to enable the attendant to monitor entrant status and to enable the Attendant to alert entrants of the need to evacuate the space.

7. Summons rescue and other emergency services as soon as the Attendant determines that the authorized Entrants may need assistance to escape from permit space hazards. The Attendant will notify the Entry Supervisor, Landfill Manager and Safety Officer that emergency services are needed.
8. Takes the following action when unauthorized persons approach or enter a permit space while entry is underway:
 - a. Warn unauthorized persons that they must stay away from the permit space.
 - b. Advise the unauthorized person that they must exit immediately if they have entered the permit space.
 - c. Inform the authorized Entrants and the Entry Supervisor if unauthorized persons have entered the permit space.
9. Performs no duties that might interfere with the Attendant's primary duty to monitor and protect the authorized entrants.

Once work has been completed in a confined space, the Attendant must return the confined space permit to the Entry Supervisor. All completed copies will be kept in the confined space logbook on the wall in the Landfill office building.

9.0 ENTRY SUPERVISOR

Employees who have completed the training and have been designated as permit space Entry Supervisors are assigned specific duties and responsibilities. These duties and responsibilities include:

1. Know the hazards that may be faced during entry, including information on the conditions, signs or symptoms, and consequences of the exposure.
2. Verifies, by checking that the appropriate entries have been made on the permit, that all tests specified by the permit have been conducted and that all procedures and equipment specified by the permit are in place before endorsing the permit and allowing entry to begin.
3. Verifies all the Lock Out Tag Out procedures have been followed on the equipment involved.
4. Terminates the entry and cancels the permit as required.
5. Verifies that rescue services are available and that the means for summoning them are operable.
6. Removes unauthorized individuals who enter or attempt to enter the permit space during entry operations.
7. Determines whenever responsibility for a permit space entry operation is transferred and at intervals dictated by the hazards and operations performed within the space that entry operations remain consistent with terms of the entry permit and that acceptable entry conditions are maintained.

14.0 REVIEW PROCEDURES

To ensure that all employees participating in entry operations are protected from permit space hazards, a review of the Permit Required Confined Space Entry Program is conducted annually, at a minimum. Terminated permits from the past 12 months, employee suggestions, and confined space entry inspections are used to revise the program as necessary.

15.0 ENFORCEMENT

Constant awareness of and respect for permit-required confined space entry hazards, and compliance with all safety rules are considered conditions of employment. The Landfill Manager reserves the right to issue disciplinary warnings to employees, up to and including termination, for failure to follow the procedures of this program.

APPENDIX B

Permit Required Confined Space Entry Procedure

1. The Landfill Manager or designee shall appoint an Entry Supervisor before any permit or non-permit required confined space work is to be performed.
2. For entry into a non-permit space, the Entry Supervisor shall determine the following:
 - a. If the work will introduce a hazard into the space that will cause it to meet the definition for permit required confined space. If so, the supervisor shall:
 - i. Temporarily reclassify the space as a permit space;
 - ii. Follow the procedures for entry into a permit space;
 - iii. Upon termination of the permit, re-inspect the space and take whatever actions necessary to remove the created hazards; and
 - iv. Reclassify the space as a non-permit space.
 - b. If the work does not introduce a hazard, the Entry Supervisor may authorize entry into the space.
3. For each entry into a permit required space, the Landfill Manager will assign the next number in the confined space entry log to the permit. The Entry Supervisor will then complete all pre-permit entry duties:
 - a. Record on the permit a descriptive identification of the permit space and its location
 - b. Record on the permit the date of entry, the time of issuance, and the time of expiration. No permit shall be issued for a period longer than eight hours.
 - c. Record on the permit the reason for the entry.
 - d. Survey the permit space without entry and review the work to be performed, to identify the existing or potential hazards. Such hazards shall be recorded on the permit.
 - e. Determine the actions necessary prior to entry to eliminate or control the hazards, and shall record them on the permit.
 - f. Determine and record the required equipment for entry.
 - g. Identify the authorized entrants and at least one attendant, and shall record their names on the permit.
 - h. Determine the type of entry that is allowed.
 - i. Indicate any other permits issued for simultaneous work within the space, and shall indicate the means to contact rescue personnel.
 - j. Sign and issue the permit, effective upon the date issued and contingent upon completion of all pre-entry activities, and expiring on the date indicated on the permit.
4. The Entry Supervisor shall perform the following pre-entry duties:
 - a. Assure that all safety equipment has been procured

8. The Entry Supervisor shall remove unauthorized persons from the permit space, as needed.
9. Completion of Entry:
 - a. The Attendant or Lead Entrant shall assure that all entrants have exited the space.
 - b. If the space was evacuated prior to completion of work:
 - i. The Attendant or Lead Entrant shall immediately terminate the permit by checking the appropriate box and describing the reasons for evacuation on the permit, then contacting the Entry Supervisor;
 - ii. The Entry Supervisor shall:
 1. Immediately notify the employee's supervisor of any injured or overexposed employee;
 2. Determine if reentry is required to complete work, eliminate a created hazard, or return the space to normal operation.
 - a. If reentry must be performed:
 - i. Resurvey the space to determine the cause of the evacuation; and
 - ii. Issue another permit which includes the elimination or control of the hazard causing the evacuation. Alternate Entry Procedures and Reclassification to Non-Permit Space shall not be approved.
 - b. If reentry is unnecessary:
 - i. Oversee the completion of the post-entry activities indicated on the permit; and
 - ii. End the entry activities.
 - c. If the entry was successfully completed, the Attendant or Lead Entrant shall:
 - i. Indicate such by checking the appropriate block on the permit;
 - ii. Oversee the completion of post-entry actions indicated on the permit, and verify by signing in the appropriate location;
 - iii. Add any pertinent information concerning the entry on the permit; and
 - iv. Return the permit to the Entry Supervisor.
10. The Entry Supervisor shall submit the canceled permit and/or any documentation prepared as a result of entry to the Landfill Manager, who shall retain the document for the required retention period. The Entry Supervisor shall also report any emergencies, evacuations, or other unexpected events related to the entry in writing to the Landfill Manager.
11. The same procedure shall apply to all Contractors.

APPENDIX C

NEW HANOVER COUNTY LANDFILL Confined Space Entry Permit

CONFINED SPACE PERMIT NUMBER _____ (assigned by the Landfill Manager or Designee only)

EQUIPMENT / UNIT #	SPACE TO BE ENTERED
SPACE TO BE ENTERED BY:	
NHC EMPLOYEE <input type="checkbox"/>	<input type="text"/>
CONTRACTOR <input type="checkbox"/>	<input type="text"/>
NAME OF CONTRACTOR _____	
SEE ATTENDANT LOG SHEET, Appendix E, FOR LIST OF ATTENDANTS	
SEE ENTRANT LOG SHEET, Appendix F, FOR LIST OF ENTRANTS	

- Space is isolated, emptied, deenergized, and cooled.
- Space is purged and ventilated. Continuous mechanical ventilation is provided if needed.
- Normal air quality is achieved and maintained. (oxy: 21%, comb gas: 0% LEL, CO: 0 ppm, toxics: 0 ppm)
- Initial and periodic air monitoring is provided. Record results on the Atmospheric Log.
- Safe, guarded access is provided to all space entrances. Specify means _____
- Safe, guarded access is provided into space. Specify means _____
- Special electrical equipment is provided and used: GFCI _____ Explosion proof _____ Low voltage _____
- Respiratory protection is provided and used. Specify type: _____
- Communication is provided and maintained. Specify type: 2-WAY-RADIO
- Attendant is provided at all entrances being used.
- Non-entry Rescue/Retrieval System is in place and used, if feasible and effective.
- Rescue service is available. Specify: NHC Rescue Squad
- Pre-entry briefing is provided by the Entry Supervisor with all Authorized Entrants & Attendants
- Other requirements: _____

AUTHORIZATION		TERMINATION	
Entry Supervisor: _____	Date: _____	Entry Supervisor: _____	Date: _____
		Attendant: _____	Date: _____
Permit Duration		<input type="checkbox"/> Worked Completed <input type="checkbox"/> Conditions Changed <input type="checkbox"/> Classified as Non-PRCS	
From: _____	To: _____		

**Scan or copy this form after the original authorization is completed.
Maintain a copy at each space entrance. Return to Landfill Manager after termination.**

APPROVED BY:

NAME	TITLE	DATE

REVISION HISTORY:

REVISION	DATE	SECTIONS	REASON

ANNUAL REVIEW:

NAME	TITLE	DATE

DISTRIBUTION:

DEPARTMENT/DIVISION	LOCATION

NEW HANOVER COUNTY
DEPARTMENT OF ENVIRONMENTAL MANAGEMENT

Hazard Communication Written Program

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OVERVIEW OF THE HAZARD COMMUNICATION STANDARD

The Occupational Safety and Health Administration of the U. S. Department of Labor issued the final "*Hazard Communication Standard*" or Right-to-Know legislation after years of study and debate. OSHA's evaluation of hazardous material labeling and communication dates back to 1974, just four years after the passage of the Occupational Safety and Health Act.

The OSHA hazard communication standard is designed to "*reduce the incidence of chemically-related occupational illnesses and injuries among employees in both the manufacturing and non-manufacturing sectors*". OSHA has assumed that the wider the base of information relating to chemical exposures in the work place, the more effectively will employers design appropriate safety measures, while simultaneously providing workers with information needed to protect themselves.

Basically, this Standard is intended to ensure that the hazards of chemicals produced or imported are evaluated, and that information concerning their hazards is transmitted to affected employers and employees within both the non-manufacturing and manufacturing sectors. This transmittal of information is to be accomplished by various means, including container labeling and other forms of warning, material safety data sheets (*hereinafter "MSDS"*), and employee training.

Regulations for the manufacturing sector were effective in 1985 and 1986. Now, OSHA has established an effective date of May 23, 1988, for compliance with all aspects of the regulation for the non-manufacturing sector.

1.0 POLICY

It is the policy of New Hanover County Department of Environmental Management to protect the health and safety of its employees and comply with applicable federal/state/local regulations concerning employee exposure to hazardous materials. In order to fulfill this responsibility, employees handling or potentially exposed to hazardous materials will be informed of the hazards involved. Such information will be communicated to employees through training programs.

It is the responsibility of management and supervision at each work center to ensure that employees are properly trained. It is the responsibility of the employee to follow the appropriate health and safety practices.

Employer responsibilities include a written Hazard Communication Program, acquisition of MSDSs on hazardous substances handled in the work place, in-house labeling of containers holding a hazardous substance, and providing employees with information and initial training on hazardous chemicals by May

23, 1988, and repeated as required.

2.0 PURPOSE AND PROCEDURE

The purpose of this program is to inform interested persons, including employees, that NHC-DEM is complying with the OSHA Hazard Communication Standard, Title 29 Code of Federal Regulations 1910.1200, by compiling a hazardous chemicals list, by using material safety data sheets (MSDSs), by ensuring that containers are labeled, and by providing employees with training and information availability.

This program applies to all work operations where employees may be exposed to hazardous substances under normal working conditions or during an emergency situation.

The Safety Manager is the program coordinator who has overall responsibility for the program. The Safety Manager will review and update the program, as necessary.

Under this program, employees will be informed of the contents of the Hazard Communication Standard, the hazardous properties of chemicals with which they work, safe handling procedures, and measures to take to protect themselves from these chemicals. Employees will also be informed of the hazards associated with non-routine tasks.

If after reading this program, you find that improvements can be made, please contact the DEM Safety Manager. Suggestions are encouraged because DEM is committed to the success of the Hazard Communication Program, and strives for clear understanding, safe behavior, and involvement in the program from every level of the company.

The chemical inventory is a list of hazardous chemicals known to be present in the workplace. Anyone who comes into contact with the hazardous chemicals on the list needs to know what those chemicals are and how to protect themselves. That is why it is so important when the Safety Manager (hazard evaluator) identifies and evaluates each and every hazardous chemical in the workplace whether it is found in a container or generated in work operations (for example, welding fumes, dusts, and exhaust fumes). Sometimes hazardous chemicals can be identified using purchase orders. The hazardous chemicals on the list can cover a variety of physical forms including liquids, solids, gases, vapors, fumes, and mists. The Safety Manager updates the inventory as necessary.

The Safety Manager keeps the chemical inventory list, along with related work practices used in the company, located in the WASTEC Materials Building and NHC Landfill.

Hazard communication will be accomplished through audiovisual aids, MSDSs, product labeling, or verbal instruction regarding the physical and health hazards imposed by hazardous substances in the work area.

3.0 DEFINITIONS

Article:

An item which meets the following criteria:

- It is formed to a specific shape or design during manufacture.
- The function of the item depends upon its shape or design during end use.
- It does not release, or otherwise result in exposure to a hazardous chemical under normal conditions of use.

Employee:

Any full-time, part-time, temporary, student co-op, summer student, or contracted individual under the direct control of the department, receiving compensation for services rendered to the department.

Chemical:

Any element, chemical compound, or mixture of elements and/or compounds.

Chemical Manufacturer:

An employer with a workplace where chemicals are produced for use or distribution.

Chemicals Otherwise Used:

Includes any activity involving a listed toxic chemical that does not meet the definition of manufacture or process. A chemical otherwise used is not intentionally incorporated into a product for distribution in commerce.

Chemical Purchase:

Any mechanism of bringing chemicals into the department such as purchase orders, field purchase orders, blanket purchase orders, petty cash, product samples, and chemicals that are included as part of a non-chemical purchase.

Consumer Product:

Any consumer product, as defined by the Consumer Product Safety Act, where the employer can demonstrate:

- It is used in the workplace in the same manner as normal consumer use.
- The workplace use results in a duration and frequency of exposure which is not greater than exposures experienced by consumers.

Distributor:

A business, other than a chemical manufacturer or importer, which supplies hazardous chemicals to other distributors or to employers.

Employer:

A person engaged in a business where chemicals are either used, distributed, or are produced for use or distribution, including a contractor or subcontractor.

Exposure or Exposed:

Means that an employee is subjected to a hazardous chemical in the course of employment through any route of entry (inhalation, ingestion, skin contact or absorption, etc.), and includes potential (e.g., accidental or possible) exposure.

Manager:

The person who has final decision making authority at a given physical location or for a specific work group.

Hazardous Chemical:

Any chemical which is a physical hazard or a health hazard.

Health Hazard:

Applies to a chemical for which there is statistically significant evidence based on at least one study conducted in accordance with established scientific principles that acute or chronic health effects may occur in exposed employees.

Manufacture:

Means to produce, prepare, compound, or import listed toxic chemicals and includes coincidental production (as a byproduct or impurity).

Mixture:

Any combination of two or more chemicals if the combination is not, in whole or in part, the result of a chemical reaction.

New Chemical:

Is a chemical not currently included on the facility's chemical inventory.

Physical Hazard:

A chemical for which there is scientifically valid evidence that it is a combustible liquid, compressed gas, explosive, flammable, organic peroxide, an oxidizer, pyrophoric, unstable (reactive), or water reactive.

Process:

Means the preparation of a listed toxic chemical, after its manufacture for distribution in commerce.

Produce:

To manufacture, process, formulate, or repackage.

Use:

To package, handle, react, or transfer.

4.0 HAZCOM PROGRAM RESPONSIBILITIES

(1) **Safety Manager:**

a) The Safety Manager is responsible for:

1. Ensuring that all elements of the program are implemented.
2. Coordinating periodic evaluation of the program.
3. Ensuring that complete up-to-date sets of MSDSs are available at the facility.
4. Ensuring that chemicals are inventoried annually.

5. Ensuring that a training program is developed and implemented.
6. Implementing and maintaining the program.
7. Ensuring that complete up-to-date sets of MSDSs are available for associate use.
8. Ensuring that employees are trained according to the provisions of this program.
9. Coordinating annual chemical inventory activities.
10. Providing contractors with an MSDS for each hazardous chemical used by DEM employees.

(2) Shift Supervisors:

- a) The Shift Supervisor is responsible for:
1. Providing employees with a list of the hazardous chemicals present at the workplace if so requested by the employee.
 2. Informing their employees of:
 - The company's written program.
 - The location of the MSDSs and how to read and understand implementing and maintaining the program.
 - How to read and understand labels.
 3. Informing employees of the hazards associated with hazardous chemicals used during non-routine work activities or chemicals contained in unlabeled pipes.
 4. Ensuring that containers of hazardous chemicals in the workplace are properly labeled.

(3) Employees:

- a) All DEM employees are required to:
1. Understand the various elements of the program.

2. Know how to obtain and use the information provided on MSDSs and labels.
3. Be familiar with the hazards of the chemicals they work with or around by reviewing MSDSs prior to use.
4. Follow safe work practices and utilize appropriate personal protective equipment when working with or around hazardous chemicals.
5. Make sure the hazardous chemical container is properly labeled prior to using or storing the chemical.
6. Notify a Supervisor when an MSDS is not available or when unsafe conditions or activities are observed.

(4) Contractors:

a) Contractors are responsible for:

1. Furnishing an MSDS for each hazardous chemical they bring on-site to which DEM employees could be exposed.
2. Keeping all containers of hazardous chemicals properly labeled.
3. Removing from the site any unused chemicals they brought on-site.

(5) Materials/Landfill Manager:

a) The Materials Manager and Landfill Manager are responsible for:

1. Acquiring Material Safety Data Sheets on all chemicals and supplies suspected of having a hazardous nature which enter the work place and providing them to the Hazard Communication Coordinator and Personnel Officer.
2. Following-up with vendors when Material Safety Data Sheets are not received in a timely manner (*90 days*).
3. Notifying contractors of Hazard Communication requirements regarding their exposure to hazardous substances in the work area through available Material Safety Data Sheets.
4. Ensuring that all incoming containers of hazardous substances are appropriately labeled.

5. Notifying the DEM Safety Manager when containers are not appropriately labeled.

6. Forwarding MSDSs to the DEM Safety Manager.

5.0 HAZARDOUS CHEMICAL INVENTORY

(1) A complete up-to-date inventory of all hazardous chemicals present at the facility must be established and maintained. The current facility Hazardous Chemical Inventory is located in Appendix A.

(2) The hazardous chemical inventory shall include:

- a) All materials that are hazardous.
- b) Hazardous chemicals that are generated during processes or work activities (e.g., welding fumes, grinding dusts).
- c) Hazardous materials produced at the facility.

(3) The Safety Manager will coordinate annual inventory activities.

(4) The annual inventory must identify:

- a) Hazardous chemicals which continue to be used.
- b) New hazardous chemicals.
- c) Hazardous chemicals which are no longer used.
- d) Inventory data for each hazardous chemical present including an estimate of the maximum daily amount on-site.
- d) The presence of an MSDS including the date of preparation.

6.0 HAZARDOUS CHEMICAL

IDENTIFICATION/DETERMINATION

(1) Each potentially hazardous chemical produced or generated as part of a process or work activity at this facility shall be evaluated to determine if it is hazardous according to OSHA criteria. The Safety Manager shall make sure that the hazard evaluation is performed.

(2) The hazard evaluation for chemicals purchased and used at this facility is performed by the chemical manufacturer or importer. The MSDS or label for the product will be relied upon to determine if it is hazardous.

(3) The following criteria shall be used to determine whether a chemical is hazardous:

a) The material must be treated as a hazardous chemical when chemicals listed on the MSDS are included in any of the following publications:

1. 29 CFR 1910, Subpart Z, Toxic and Hazardous Substances, OSHA.
2. Threshold Limit Values for Chemical Substances and Physical Agents In the Work Environment. ACGIH, (latest edition).
3. National Toxicology Program (NTP), Annual Report on Carcinogens (latest edition).
4. International Agency for Research on Cancer (IARC), Monographs. (latest edition).

b) Mixtures are considered hazardous, if one or more of the following conditions are met:

1. Product tests show that the mixture as a whole is hazardous.
2. The mixture contains 1 percent or more of a component that is a health hazard (0.1 percent or more, if the component is a carcinogen).
3. The mixture contains less than 1 percent of a hazardous component (0.1 percent for a carcinogen), and unsafe

concentrations of this component could be released into the air.

4. Valid scientific data show that a potential physical hazard exists.

7.0 MSDS MANAGEMENT

(1) **MSDS Availability:**

- a) The most current MSDS shall be available for each hazardous chemical identified on the inventory list.
- b) MSDSs shall be kept on file for all hazardous chemicals in the workplace as follows:
 1. The master MSDS file for all hazardous chemicals at the facility shall be kept in the Materials Manager's Office.
 2. Complete sets of the MSDSs shall be located at the following locations:
 - WASTEC Materials Building
 - WASTEC Control Room
 - DEM Recycling Office
 - New Hanover County Landfill
 3. Supervisors must ensure that their employees know where to find the MSDSs for chemicals in their work area.
 4. MSDSs for chemicals used or transported by truck drivers will be kept at the facility. The Supervisor will ensure that these employees are able to immediately obtain necessary information from the MSDSs during an emergency.
- c) MSDSs shall be available to employees in the workplace during their work shift.

(2) **Maintaining MSDSs:**

- a) When a hazardous chemical currently in use is received from the supplier:
1. The employee receiving the chemical shall check to see if a MSDS was included with the shipment.
 2. If there is a MSDS, it shall be forwarded to the Safety Manager, who will then review the MSDS to determine if it has been revised. Files shall be updated if the MSDS is revised.
 3. If no MSDS was included with the shipment, the Safety Manager shall be informed and shall check the MSDS file to determine if an MSDS is available.
 4. If an MSDS is available, the product can be used.
 5. If no MSDS is available, the Safety Manager shall contact the manufacturer or supplier as soon as possible and request that the appropriate MSDS be sent. Upon receipt, the MSDS files shall be updated.
 6. No hazardous chemical can be used if the MSDS is not available.
 7. If there is no MSDS available, the hazardous chemical shall be returned to the supplier.
- b) When a new hazardous chemical is received from the supplier:
1. The shipment shall be checked to determine if a MSDS has been included.
 2. If there is a MSDS, it shall be forwarded to the Safety Manager and the MSDS files shall be updated.
 3. If no MSDS is available, the Safety Manager shall be informed as soon as possible. The product shall not be used until a MSDS is obtained.
 4. The Safety Manager shall contact the manufacturer or supplier as soon as possible and request that the MSDS

be sent for the new chemical. The MSDS files shall be updated.

5. A copy of the MSDS will be provided to Area Supervisors where the chemical is used. If the chemical presents new hazards, Supervisors shall provide supplemental training to employees.
 6. Associates shall not use a new chemical until the MSDS has been reviewed.
- c) When a new chemical is purchased from a local retail outlet or supplier:
1. The individual purchasing the hazardous chemical must obtain a MSDS at the time of purchase.
 2. If no MSDS is available at the time of purchase, the Safety Manager shall be informed and shall obtain the MSDS from the manufacturer as outline above.
 3. The hazardous chemical shall not be used until a MSDS is on file and appropriate training is provided.
- d) When an MSDS is received separate from a chemical shipment:
1. The individual who receives the MSDS shall forward it to the Safety Manager, who will review the MSDS and update the files accordingly.
- e) When stock supplies of a hazardous substance are depleted and no longer will be utilized on site, the Safety Manager shall be informed. The Safety Manager shall remove the MSDSs from the facility's MSDS files and update the chemical inventory.

- f) MSDSs for hazardous chemicals which pose health hazards or records which show the identity (chemical name) of the hazardous chemical, where it was used, and when it was used, shall be maintained for at least 30 years.

(3) MSDS Information and Review:

- a) The Safety Manager will review each new MSDS to ensure that it is complete.
- b) If an MSDS is incomplete, it may be used until a revised, complete MSDS is obtained by the Materials Manager from the manufacturer.

8.0 LABELS AND OTHER FORMS OF WARNING

- (1) Chemical manufacturers, importers, or distributors are responsible for labeling, tagging, or marking the containers for each hazardous chemical they distribute.
- (2) Hazardous chemical containers received at the facility must have labels, tags, or markings which include the following information:
 - a) Identity of the hazardous chemical.
 - b) Appropriate hazard warnings.
 - c) Name and address of the chemical manufacturer, importer, or other responsible party.
- (3) Incoming hazardous chemical containers shall be inspected to ensure that they are properly labeled. Shipments of unlabeled or improperly labeled chemicals shall be refused.
- (4) Once a hazardous chemical is received, all associates in the work area where the chemical is used must ensure that the container

remains labeled. Hazardous chemical containers that are used or stored in the workplace that do not have the original manufacturer's label must be labeled, tagged, or marked with the following information:

- a) Identity of the hazardous chemical.
 - b) Appropriate hazard warnings.
- (5) Whenever a hazardous chemical is transferred from its original container to another container, the new container must be labeled, unless it is immediately used by the employee who performs the transfer (i.e., prior to the end of the shift).
 - (6) Labels may be any size or format. However, they must be legible, prominently displayed or readily available at all times.
 - (7) The NFPA 704 Labeling Procedures are used at DEM and are further explained in Appendix C.
 - (8) Labels on incoming containers must not be removed or defaced unless the container is immediately marked with the required information.
 - (9) If the label has been removed or defaced, it must be replaced with a new label.
 - (10) On some storage tanks, vats, vessels, or individual stationary process containers, signs, placards, process sheets, batch tickets, operating procedures, or other such written materials may be used instead of labels, as long as the alternative method identifies the container to which it applies, and conveys the required information.
 - (11) Pipes or piping Systems within the facility, and engines, fuel tanks on vehicles, or other operating systems of a vehicle are not required to be labeled. However, prior to working on unlabeled pipes which have

contained chemicals, the Supervisor shall ensure that the employees are informed of the hazards of the chemicals.

- (12) Shift Supervisors will ensure that containers used or stored within their work areas remain properly labeled. If a container is not properly labeled, the Supervisor must prepare a new label for the container.

- (13) Any employee who discovers a hazardous chemical container which is not properly labeled must immediately take actions to correct this problem. The employee must:
 - a) Inform the Supervisor in charge of the work area, or;
 - b) Coordinate with Safety Manager in order to prepare a new label for the container (See Appendix C).

9.0 PROCEDURES FOR NON-ROUTINE WORK ACTIVITIES

- (1) Supervisors must ensure that their employees are informed of the hazards associated with hazardous chemicals they use during a non-routine work activity (i.e., painting in a confined space).

- (2) When employees have not been trained to safely use the hazardous chemicals required for the non-routine job, or when the non-routine activity alters the hazardous properties of the materials, the Supervisor must ensure that the following requirements are met:
 - a) MSDS: Review the MSDSs to determine what hazard(s) may prevail.
 - b) Personal Protective Equipment: Make sure all required personal protective equipment is available and used, associates are trained, all medical surveillance requirements are met prior to equipment use.
 - c) Engineering Controls and Special Equipment: Ensure that any special equipment needed to safely perform the non-routine work activity is available (e.g., exhaust ventilation systems, confined

space rescue equipment, special tools, engineering controls, etc.) and is used, and that associates are properly trained.

- d) Administrative Controls: Ensure that administrative controls are utilized (e.g., permits for confined space entry, lockout/tagout, etc.) as needed.
- e) Special Work Procedures: Ensure that workers are properly trained to follow any special work procedures that apply.

10.0 HAZARD INFORMATION EXCHANGE

- (1) The Safety Manager must ensure that hazardous chemical information is provided to any contractor (vendor, consultant, or other outside employer) if the contractor's employee(s) may be exposed to hazardous chemicals used by DEM employees. The following requirements apply:
 - a) Provide copies of MSDSs to the contractor for any hazardous chemicals that their worker(s) may be exposed to, or;
 - b) Make these MSDSs available at a central location in the workplace.
 - c) Inform the contractor of any precautionary measures required to protect their employee(s) during routine operations and foreseeable emergencies.
 - d) Inform the contractor about the labeling system used in the workplace.

- (2) The Safety Manager must ensure that any contractor whose associates bring hazardous chemicals onto DEM property provides the following information:
 - a) Copies of MSDSs for all hazardous chemicals brought on-site.

- b) A description of the labeling system used to identify any hazardous chemicals that are brought on-site.
 - c) A description of any precautionary measures required to protect DEM employees during routine activities and foreseeable emergencies.
- (3) The Safety Manager must review the contractor's MSDSs to determine whether a new hazard is being introduced into the work area of DEM employees. If the contractor's materials present new potential hazards, the Safety Manager must inform the Area Supervisors and make the contractor's MSDS available.
- (4) The Shift Supervisor must:
- a) Train their employees if they could potentially be exposed to hazardous chemicals brought into the workplace by the contractor.
 - b) Provide any required personal protective equipment for their employees.

11.0 HAZARD COMMUNICATION TRAINING

- (1) Hazard Communication (HAZCOM) Training will be provided to all employees to ensure that workplace hazards and appropriate control measures are understood.
- (2) The Safety Manager will ensure that HAZCOM Training is provided to:
- a) New employees as part of their initial New-Hire Safety Orientation Training.
 - b) All employees on a regular basis (e.g., annually) to ensure that employees remain familiar with the HAZCOM Program and how and where to access HAZCOM information.

- c) All employees whenever a new hazard is introduced into their work area due to:
 - d) The introduction of a new hazardous substance, or
 - e) A process or equipment change which could cause new or increased employee exposures.
 - f) Any associate prior to their transfer to an area where new hazards are present.
 - g) Any associate performing a non-routine task where potential hazards are present.
- (3) At a minimum, hazard communication training must:
- a) Explain the requirements included in the Hazard Communication Standard CFR 1910.1200).
 - b) Describe any operations in the work area where hazardous chemicals are present.
 - c) Explain how to locate and use the written Hazard Communication Program, including the chemical inventories and MSDSs (Appendix B).
 - d) Discuss methods and observations used to detect the presence or release of a hazardous chemical into the work area, including:
 - 1. Exposure monitoring methods.
 - 2. Continuous monitoring devices.
 - 3. Signs or symptoms of employee exposures to hazardous chemicals.
 - 4. Visual appearance or odors of hazardous chemicals during release.
 - e) Describe the physical and health hazards associated with each hazardous chemical in the work area, and the hazards associated with hazardous chemicals used during non-routine work activities or chemicals contained in unlabeled pipes.

f) Explain the measures employees can take to protect themselves from these hazards, including:

1. Safe work practices.
2. Emergency procedures.
3. Using appropriate personal protective equipment.

g) Discuss the details of the Hazard Communication Program, including an explanation of:

1. The labeling system (Appendix C).
2. How to locate and use MSDSs.
3. How to obtain and use the hazard information (Appendix D).

(4) Any time an employee is provided HAZCOM training it must be documented. The Safety Manager is responsible for maintaining training records.

APPENDIX A
DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
CHEMICAL INVENTORY LIST
(See MSDS Book)

APPENDIX B

EMPLOYEE'S GUIDE TO UNDERSTANDING A MATERIAL SAFETY DATA SHEET

We have all become aware and concerned about chemicals and specifically, hazardous materials. To help provide people who may use hazardous materials with information about the materials, manufacturers or producers develop a document called a Material Safety Data Sheet. The purpose of this program is to allow you to become familiar with the information that is on the MSDS.

Each MSDS is divided into eight sections. Each section will show information that is specific for the material discussed. Following is a brief description and the information it contains.

SECTION I: Product Identification

Manufacturer's Name and Address	This is the producer of the material.
Emergency Telephone Number	To be used in an emergency to obtain more information concerning the material.
Chemical Name and Synonyms	Generally refers to products consisting of a single element or compound such as oxygen or methyl ketone.
Trade Name and Synonyms	The most common used names for the material such as creosote oil.
Chemical Family or Product Class	Refers to the generic name of single elements or compounds such as acid or ketone.
Formula	Generally used for only elements or compounds not to the formulation of a mixture.

SECTION II: Hazardous Ingredients

Ingredient	A hazardous ingredient is a hazardous
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material in a mixture in sufficient concentration to produce enough flammable vapor or gas to ignite or to produce acute (immediate) or chronic (long term) adverse effects in doses in which could result from normal use or predictable misuse of the mixture containing it.

Percent	The approximate percentage of each hazardous ingredient by weight or volume in the product.
TLV	The threshold limit value - this item will be discussed under Section V.

SECTION III: Physical Data

Boiling Point	The temperature at which a liquid F°.
Vapor Pressure	The pressure of the saturated vapor above a liquid in millimeters of mercury at 20°C.
Vapor Density	The relative weight of a vapor or gas (with no air present) compared with an equal volume of air. This will tell if the vapor will rise or flow to the ground.
Solubility in Water	The ability of the material to be dissolved in water. Negligible - less than 0.1% by weight Slight - 0.1% to 1% by weight Moderate - 1% to 10% by weight Appreciable - more than 10% Complete - in all proportions
Specific Gravity	The weight of the material compare to the weight of an equal volume of water. This determines if it will float or sink in water.
Percentage Volatile	This is the percentage of the material that by volume, will evaporate at normal a temperature of 70°F.
Evaporation Rate	Refers to whether the evaporation rate is

greater or less than either Buty Acetate or Ether.

Appearance and Odor Is a brief generic description such as: viscous liquid or colorless liquid with aromatic smell, and dark red crystals

SECTION IV: Fire And Explosion Hazard Data

Flash Point The temperature in °F at which a liquid will give off enough flammable vapor to ignite.

Flammable or Explosive Limits Is the range of vapor or gas concentration (percent by volume in air) which will burn or explode if an ignition source is present. The lower explosive limit (LEL) is when the mixture and air is too lean to burn and the upper explosive limit (UEL) is when the mixture is too rich to burn.

Extinguishing Media The fire fighting media this is suitable for use on the burning material. The standard fire fighting media are: water/fog, foam, alcohol foam, CO² and dry chemical.

Special Fire Fighting Procedures If water is unsuitable, the specific fire fighting media to used. This will also indicate special personal protective equipment to be used by firefighters.

Unusual Fire and Explosion Hazards Specifies such hazards and/or any special conditions that govern them.

SECTION V: Reactivity Data

Stability A check or cross will indicate whether the material is stable or unstable under reasonably foreseeable conditions of storage, use or misuse. If the material is unstable, the conditions which would cause a dangerous reaction are listed.

Incompatibility Information on such common materials and

contaminants with which the product may reasonably come into contact to produce a reaction which would release large amount of energy. If there are no such materials, it will be noted.

Hazardous De-
composition
Products

A listing of hazardous materials produced in dangerous amounts of burning, oxidation, or by heating in welding or cutting. Examples would be CO, CO² and hydrochloric acid from PVC plastics.

Hazardous Poly-
merization

A cross or check will indicate if this condition will or will not happen. It is a reaction which takes place at a high rate which releases large amounts of energy. If the condition can take place the listing of those reasonably foreseeable storage condition that will start polymerization will be shown.

SECTION VI: Health Hazard Data

Threshold Limit
Value (TLV)

The airborne concentration of substances expressed as either parts (ppm) or weight of material per cubic meter of air (Mg/M³) and represents conditions under which it is believed that nearly all workers may be repeatedly exposed day after day without adverse effect. Because of wide variation in individual susceptibility, however, a small percentage of workers may experience discomfort from substances at concentrations at or below the TLV. The threshold limit values are reviewed and published annually by the American Conference of Governmental Industrial Hygienists (ACGIH).

Effects of Over-
exposure

The most common effects that an overexposed person will feel and his appearance. An example would be eye and nose irritation, shortness of breath, vomiting. First Aid is considered the recommended first aid measure (refer to information found in the Material Safety Data Sheet). These are

emergency procedures only. The victim should be examined by a physician as soon as possible after overexposure.

SECTION VII: Precautions For Safe Handling And Use

Steps to be Taken	Any applicable precautions such as: avoid breathing or remove sources of ignition, and any special equipment to be used for cleanup.
Waste Disposal Method	General Instruction on handling the materials that have been cleaned up.
Precautions for Handling/Storing	To avoid reactions with nearby materials.

SECTION VIII: Control Measures

Respiratory Protection	Depicts type of respiratory needed.
Ventilation	Suggests air movement devices to limit airborne hazard.
Personal Protection	Suggests other clothing appropriate for the hazard.

APPENDIX C

NFPA 704 MARKING SYSTEM

THE NFPA 704 MARKING SYSTEM



The NFPA 704 Marking System distinctively indicates the properties and potential dangers of hazardous materials. The following is an explanation of the meanings of the Quadrant Numerical Codes:

HEALTH (Blue)

IN GENERAL, HEALTH HAZARD IN FIREFIGHTING IS THAT OF A SINGLE EXPOSURE WHICH MAY VARY FROM A FEW SECONDS UP TO AN HOUR. THE PHYSICAL EXERTION DEMANDED IN FIREFIGHTING OR OTHER EMERGENCY CONDITIONS MAY BE EXPECTED TO INTENSIFY THE EFFECTS OF ANY EXPOSURE. ONLY HAZARDS ARISING OUT OF AN INHERENT PROPERTY OF THE MATERIAL ARE CONSIDERED. THE FOLLOWING EXPLANATION IS BASED UPON PROTECTIVE EQUIPMENT NORMALLY USED BY FIREFIGHTERS:

- 4** MATERIALS TOO DANGEROUS TO HEALTH TO EXPOSE FIREFIGHTERS. A FEW WHIFFS OF THE VAPOR COULD CAUSE DEATH OR THE VAPOR OF LIQUID COULD BE FATAL ON PENETRATING THE FIREFIGHTER'S NORMAL FULL PROTECTIVE CLOTHING. THE NORMAL, FULL-PROTECTIVE CLOTHING AND BREATHING APPARATUS AVAILABLE TO THE AVERAGE FIRE DEPARTMENT WILL NOT PROVIDE ADEQUATE PROTECTION AGAINST INHALATION OR SKIN CONTACT WITH THESE MATERIALS.
- 3** MATERIALS EXTREMELY HAZARDOUS TO HEALTH, BUT AREAS MAY BE ENTERED WITH EXTREME CARE. FULL-PROTECTIVE CLOTHING INCLUDING SELF-CONTAINED BREATHING APPARATUS, COAT, PANTS, GLOVES, BOOTS AND BANDS AROUND LEGS, ARMS, AND WAIST SHOULD BE PROVIDED. NO SKIN SURFACE SHOULD BE EXPOSED.
- 2** MATERIALS HAZARDOUS TO HEALTH, BUT AREAS MAY BE ENTERED FREELY WITH FULL-FACE MASK AND SELF-CONTAINED BREATHING APPARATUS WHICH PROVIDES EYE PROTECTION.
- 1** MATERIALS ONLY SLIGHTLY HAZARDOUS TO HEALTH. IT MAY BE DESIRABLE TO WEAR SELF-CONTAINED BREATHING APPARATUS.
- 0** MATERIALS WHICH WOULD OFFER NO HAZARD BEYOND THAT OF ORDINARY COMBUSTIBLE MATERIAL UPON EXPOSURE UNDER FIRE CONDITIONS.

FLAMMABILITY (Red)

SUSCEPTIBILITY TO BURNING IS THE BASIS FOR ASSIGNING DEGREES WITHIN THIS CATEGORY. THE METHOD OF ATTACKING THE FIRE IS INFLUENCED BY THIS SUSCEPTIBILITY FACTOR.

- 4** VERY FLAMMABLE GASES OR VERY VOLATILE FLAMMABLE LIQUIDS. SHUT OFF FLOW AND KEEP COOLING WATER STREAMS ON EXPOSED TANKS OR CONTAINERS.
- 3** MATERIALS WHICH CAN BE IGNITED UNDER ALMOST ALL NORMAL TEMPERATURE CONDITIONS. WATER MAY BE INEFFECTIVE BECAUSE OF THE LOW FLASH POINT.
- 2** MATERIALS WHICH MUST BE MODERATELY HEATED BEFORE IGNITION WILL OCCUR. WATER SPRAY MUST BE USED TO EXTINGUISH THE FIRE BECAUSE THE MATERIAL CAN BE COOLED BELOW ITS FLASH POINT.
- 1** MATERIALS THAT MUST BE PREHEATED BEFORE IGNITION CAN OCCUR. WATER MAY CAUSE FROTHING IF IT GETS BELOW THE SURFACE OF THE LIQUID AND TURNS TO STEAM. HOWEVER, WATER FOG GENTLY APPLIED TO THE SURFACE WILL CAUSE A FROTHING WHICH WILL EXTINGUISH THE FIRE.
- 0** MATERIALS THAT WILL NOT BURN.

REACTIVITY (STABILITY) (Yellow)

THE ASSIGNMENT OF DEGREES IN THE REACTIVITY CATEGORY IS BASED UPON THE SUSCEPTIBILITY OF MATERIALS TO RELEASE ENERGY EITHER BY THEMSELVES OR IN COMBINATION WITH WATER. FIRE EXPOSURE WAS ONE OF THE FACTORS CONSIDERED ALONG WITH CONDITIONS OF SHOCK AND PRESSURE.

- 4** MATERIALS WHICH (IN THEMSELVES) ARE READILY CAPABLE OF DETONATION OR OF EXPLOSIVE DECOMPOSITION OR EXPLOSIVE REACTION AT NORMAL TEMPERATURES AND PRESSURES. INCLUDES MATERIALS WHICH ARE SENSITIVE TO MECHANICAL OR LOCALIZED THERMAL SHOCK. IF A CHEMICAL WITH THIS HAZARD RATING IS IN AN ADVANCED OR MASSIVE FIRE, THE AREA SHOULD BE EVACUATED.
- 3** MATERIALS WHICH (IN THEMSELVES) ARE CAPABLE OF DETONATION OR OF EXPLOSIVE DECOMPOSITION OR EXPLOSIVE REACTION BUT WHICH REQUIRE A STRONG INITIATING SOURCE OR WHICH MUST BE HEATED UNDER CONFINEMENT BEFORE INITIATION. INCLUDES MATERIALS WHICH ARE SENSITIVE TO THERMAL OR MECHANICAL SHOCK AT ELEVATED TEMPERATURES AND PRESSURES OR WHICH REACT EXPLOSIVELY WITH WATER WITHOUT REQUIRING HEAT OR CONFINEMENT. FIREFIGHTING SHOULD BE DONE FROM AN EXPLOSIVE-RESISTANT LOCATION.
- 2** MATERIALS WHICH (IN THEMSELVES) ARE NORMALLY UNSTABLE AND RAPIDLY UNDERGO VIOLENT CHEMICAL CHANGE BUT DO NOT DETONATE. INCLUDES MATERIALS WHICH CAN UNDERGO CHEMICAL CHANGE WITH RAPID RELEASE OF ENERGY AT NORMAL TEMPERATURES AND PRESSURES OR WHICH CAN UNDERGO VIOLENT CHEMICAL CHANGE AT ELEVATED TEMPERATURES AND PRESSURES. ALSO INCLUDES THOSE MATERIALS WHICH MAY REACT VIOLENTLY WITH WATER OR WHICH MAY FORM POTENTIALLY EXPLOSIVE MIXTURES WITH WATER. IN ADVANCE OR MASSIVE FIRES, FIREFIGHTING SHOULD BE DONE FROM A SAFE DISTANCE OR FROM A PROTECTED LOCATION.
- 1** MATERIALS WHICH (IN THEMSELVES) ARE NORMALLY STABLE BUT WHICH MAY BECOME UNSTABLE AT ELEVATED TEMPERATURES AND PRESSURES OR WHICH MAY REACT WITH WATER WITH SOME RELEASE OF ENERGY BUT NOT VIOLENTLY. CAUTION MUST BE USED IN APPROACHING THE FIRE AND APPLYING WATER.
- 0** MATERIALS WHICH (IN THEMSELVES) ARE NORMALLY STABLE EVEN UNDER FIRE EXPOSURE CONDITIONS AND WHICH ARE NOT REACTIVE WITH WATER. NORMAL FIREFIGHTING PROCEDURES MAY BE USED.

SPECIAL INFORMATION (White)



MATERIALS WHICH DEMONSTRATE UNUSUAL REACTIVITY WITH WATER SHALL BE IDENTIFIED WITH THE LETTER W WITH A HORIZONTAL LINE THROUGH THE CENTER (W).



MATERIALS WHICH POSSESS OXIDIZING PROPERTIES SHALL BE IDENTIFIED BY THE LETTERS OX.



MATERIALS POSSESSING RADIOACTIVITY HAZARDS SHALL BE IDENTIFIED BY THE STANDARD RADIOACTIVITY SYMBOL.

APPENDIX D

LEGEND FOR HAZARD CLASSIFICATION SYMBOLS

CA	Carcinogenic	- known cancer causing substance in humans
CR	Corrosive	- a substance that causes irreversible alterations in living tissue
HT	Highly Toxic	- a chemical that has been rated by means of human studies as having a serious adverse effect upon humans given sufficient exposure through one or more routes of entry into the body
I	Irritant	- a chemical which is not corrosive, but causes a reversible inflammatory effect on living tissue
S	Sensitizer	- a chemical that can cause an allergic reaction in normal tissue after a repeated exposure to the chemical
T	Toxic	- a chemical that has been rated by means of animal or human studies as having an adverse effect upon humans given sufficient exposure through one or more routes of entry into the body
TO	Target Organ-	exposure to a chemical substance can effect one or more specific organs in the body directly and cause destruction of those effected organs or limit their function
PH	Physical Hazard	- a substance that has a potential to explode, or has the potential through its vapor or dust to ignite in the presence of a spark or heat source
TLV	Threshold Limit Value	- the concentration to which the average human population can be exposed to a chemical substance without adverse effect

Other Terms: Tumorigenic, Mutagenic mean that tumors or cellular changes

have been observed in animal studies upon exposure to the chemical. Also, CNS, or Central Nervous System effects may be noted.

APPENDIX E

MATERIAL SAFETY DATA SHEET EMPLOYEE REQUEST
FOLLOW-UP

DATE: _____

FOLLOW-UP of MSDS ON _____
(CHEMICAL NAME)

FROM: _____
(PURCHASING OFFICER)

TO: _____
(EMPLOYEE NAME)

(DEPARTMENT)

We have not been able to secure from our supplier a copy of the Material Safety Data Sheet on _____ which you have requested. We have now filed a complaint with the authorities requesting their assistance in obtaining the MSDS requested.

(PURCHASING OFFICER)

(DATE)

I have not received a copy of the MSDS on _____ which I requested, but I understand that my employer has made a good faith effort to obtain this document. My employer has provided a copy of the letters to our supplier and the _____
(REGULATORY AGENCY)

showing that a request was made for this information, and that subsequently a complaint has been filed seeking assistance in obtaining this Material Safety Data Sheet for me.

(EMPLOYEE SIGNATURE)

(DATE)

APPENDIX F

CHEMICAL HAZARD DETERMINATION PROCEDURE

Each chemical material compound utilized in the facility operations is represented in the log of Material Safety Data Sheets (MSDS) stored at the Farm Manager's office. Per the OSHA Hazard Communication Standard, each MSDS was reviewed for the purpose of taking an inventory of all chemicals handled in the facility. The criteria for this inventory listing was that the constituent percentage of each chemical in a mixture had to be greater than 1.0% by weight or volume, or in the case of carcinogenic materials a percentage of 0.1% or greater.

For each MSDS and the chemicals meeting the above criteria, an evaluation of the hazardous nature of each substance was made according to the following guidelines.

1. Is there an established Threshold Limit Value (TLV) per OCGIH or OSHA?
2. Does any constituent have recognized carcinogenic (CA) potential for humans or animals?
3. Is there a corrosive nature (CR) in any of the constituent materials as defined under the OSHA Hazard Communication Standard?
4. Is any constituent considered Toxic(T), or Highly Toxic (HT) per the definition found in the Standard?
5. Is any constituent material have any irritant (I) or sensitizing (S) characteristic?
6. Are Target Organs (TO) e.g., bone, blood, lungs, etc. effected by acute or chronic exposure?
7. Is there a fire or explosion (PH) hazard that should dictate special precautions during physical handling operations?

Located in this manual is the entire listing of chemicals handled by this division. The list is arranged alphabetically by Trade Identification Name.

The primary evaluation of each MSDSs for hazardous potential was accomplished through information obtained from the manufacturer.

APPROVED BY:

NAME	TITLE	DATE

REVISION HISTORY:

REVISION	DATE	SECTIONS	REASON

ANNUAL REVIEW:

NAME	TITLE	DATE

DISTRIBUTION:

DEPARTMENT/DIVISION	LOCATION

**HEARING CONSERVATION
PLAN/OCCUPATIONAL EXPOSURE TO
NOISE**

(29 CFR 1910.95)

1.0 PURPOSE

1. To provide a hearing conservation program for those Department of Environmental Management employees whose job duties expose them to levels of noise regulated by OSHA.
2. To comply with all Occupational Safety and Health Administration (OSHA) regulations concerning workplace noise exposure.

2.0 INTRODUCTION

This Hearing Conservation Program (HCP) was created by the Department of Environmental Management to prevent employees from developing noise-induced hearing loss as a result of excessive on-the-job noise exposure. The DEM HCP meets all the requirements of the Department of Labor Occupational Noise Exposure Standard (29 CFR 1910.95) promulgated by OSHA. The overall goal of the program is to not only comply with federal and state regulations, but to also be an effective tool in the prevention of occupational noise-induced hearing loss and its damaging economic and social effects.

The Environmental Management Safety Office will be responsible for initiating sound surveys, evaluating work areas based on noise exposure, and recommending proper controls or hearing protection devices where necessary. Implementation of engineering controls to reduce noise exposure will be the responsibility of the affected section. The Occupational Health office will also maintain audiometric testing records, updated annually, to determine if protection devices and controls have been adequate.

3.0 DEFINITIONS

Action Level: The noise level (85 dBA), calculated as an eight-hour, time-weighted average, at which OSHA requires exposed employees be included in the Hearing Conservation Program.

AIHA: American Industrial Hygiene Association.

ANSI: American National Standards Institute.

Audiogram: The chart, graph, or table showing hearing threshold level as a function of frequency; a method of measuring degree of hearing loss.

CAOHC: Council for Accreditation in Occupational Hearing Conservation.

CFR: Code of Federal Regulation.

Decibel (dB): A dimensionless unit of measurement of sound level.

dBA: Sound level measured in decibels on the A-weighted scale.

dBC: Sound level measured in decibels on the C-weighted scale.

Employee: Any person that is given monetary compensation for performance of a function at DEM.

HCP: The Hearing Conservation Program of DEM.

HPD: Hearing Protection Device.

Noise-Induced Permanent Threshold Shift (NIPTS): Hearing loss suffered as the result of noise exposure, all or part of which is permanent.

Noise Dosimeter: An instrument that integrates a function of sound pressure over a period of time in such a manner that it directly indicates a noise dose.

Noise Reduction Rating (NRR): This is the HPD manufacturer's single number attenuation rating based on idealistic laboratory measurements across a range of frequencies.

Permissible Exposure Limit (PEL): This is the eight-hour, time-weighted average noise level that must not be exceeded. These levels are specified in the OSHA regulations.

Sound Level Meter (SLM): This is the basic instrument used to measure sound pressure variations in air.

Sound Pressure Level (SPL): Measured in decibels, it is 20 times the logarithm to the base 10 of the ratio of the pressure of a sound to the reference pressure.

Temporary Threshold Shift (TTS): Hearing loss suffered as the result of noise exposure, all or part of which is recovered a period of time after removal from the noise source.

Time-Weighted Average (TWA): The sound level which, if constant over an eight-hour exposure, would result in the same noise dose as is measured.

4.0 PROGRAM OVERVIEW

It is the policy of the Department of Environmental management to make all reasonable attempts to reduce employee noise exposure. All phases of this program are designed to accomplish that mission.

Accompanying each section of this program is a checklist of essential components (as provided by Royster and Royster, 1990, with additions applicable to the department) to summarize the goals of each phase of the HCP. The following lists the specific phases of the DEM Hearing Conservation Program:

- **Noise Measurements/Sound Surveys**
- **Engineering and Administrative Controls**
- **Audiometric Testing**
- **Hearing Protection**
- **Employee Training and Education**
- **Recordkeeping**
- **Program Evaluation**

This document is intended to provide hearing conservation information to supervisory personnel of all affected noise exposure areas, as well as to DEM personnel responsible for monitoring and documentation. A separate program summary will be developed and distributed to employees to provide an overview of the HCP and its relevance to those whose daily job functions include exposure to high levels of noise.

4.1 Noise Measurements/Sound Surveys

Noise measurements are necessary to identify those employees that are overexposed and the machines or work processes contributing to these exposures. Accurate exposure measurements are needed so that employees can be identified for inclusion in the HCP and for audiometric monitoring purposes. If it is discovered that a worker is exposed to an excessive amount of noise, these measurements are needed to determine the proper hearing protection device (HPD) to be utilized and, if necessary, the proper engineering and/or administrative controls that will be implemented.

A Type II sound level meter (SLM) is appropriate for noise monitoring when there is little fluctuation in the noise level. In fluctuating noise, dosimeters or integrating SLMs are preferable to more accurately estimate employee noise exposures. The Department of Environmental Management currently utilizes instruments that function as both digital sound level meters and personal noise dosimeters.

Initial sound surveys will then be conducted to determine if employees in the work area have an eight-hour, time-weighted average noise exposure of 85 dBA or greater, the OSHA mandated action level to include those employees in the HCP. If an area meets the 85 dBA action level, detailed sound surveys will then be initiated to determine each affected worker's daily noise dose and equivalent OSHA time-weighted average (TWA) noise exposure. These surveys will be conducted annually or upon discovery of a significant difference in an employee's audiometric data. These surveys will also be conducted when new machinery is added or a work process incurs a significant change.

A noise map of the facility will be created to classify work areas by noise exposure. The following table is a recommended scheme for classifying work areas based on calculated TWAs:

TWA, dBA	Classification
84 or below	A
85-89	B
90-94	C
95-99	D
100 or above	E

Note that HCP personnel working in areas classified as E should be given special attention because HPD devices are often inadequate at that noise level.

4.2 Engineering and Administrative Controls

Excessive noise sources should be controlled through the use of engineering and administrative controls wherever feasible. During a basic and detailed sound survey the surveyor will identify the dominant noise source(s) in the room. Excessive noise problems may be remedied by controlling noise at the source, along the path, or at the receiver (employee). The method chosen is dependent upon the particular problem to be solved and is limited by such factors as feasibility, relative effectiveness, and impact upon the employees and their production.

Whenever possible, the surveyor will measure the sound levels at each employee workstation as individual pieces of equipment in the work area are run separately to determine the relative noise contribution of each piece. Once the dominant noise sources are identified, the significant contributing noise sources within each dominant piece of equipment will be determined and analyzed. Ideally this process will isolate the highest contributing noise sources and methods for controlling them can be evaluated and implemented.

Methods of noise control along the path are all aimed at attenuating airborne sound. Whole or partial equipment enclosures can significantly reduce overall noise levels in work areas by isolating machines from operators. Whenever equipment enclosures are not possible or feasible, shields or barriers will be

utilized. These controls are effective because they can absorb or reflect sound waves away from the operator.

Methods of reducing high levels of noise at the receiver (operator) include hearing protection devices, which will be explained in the *Hearing Protection* section of this manual.

Administrative controls include a very broad and often practical range of noise control solutions. The most common administrative noise control is the modification of work schedules to limit employee noise exposures. This can not only reduce noise exposures, but can sometimes increase productivity by dividing a demanding task between two or more employees. Caution will be taken to prevent an increase in the percentage of the workforce being exposed to noise hazards. A regularly scheduled equipment maintenance program and the establishment of set noise control limits for new or modified equipment are also effective administrative means of controlling noise, and will be highly recommended to affected work areas and supervisors.

It is the policy of OSHA to enforce the use of engineering and administrative noise controls wherever feasible, particularly in areas where hearing protection devices alone are not adequate. As stated before, the implementation of recommended engineering or administrative controls will be the responsibility of the affected department. An additional appendix will eventually be included with this program manual listing situational engineering and administrative noise exposure solutions.

CHECKLIST FOR NOISE CONTROLS

- Engineering Noise Control Survey and report have been completed.
- Dominant production noise sources are identified.
- Contributing equipment noise sources are identified.
- Noise control maintenance program exists.
- HCP education phase includes engineering controls.
- New facility planning includes noise control.
- Solution of noise problems has been documented.

4.3 Audiometric Testing

Audiometric testing is an integral part of the hearing conservation program because it is the only true measure of the program's success. The object of the tests will be to identify workers in the early stages of hearing loss and intervene before the loss becomes worse. The results of audiometric testing will be used to determine if and what type of hearing protection is needed, and if already in use, what further steps must be taken to control an excessive noise problem.

The DEM Safety Program includes annual audiometric testing for those employees indicating high-noise work environments on their surveys, and for employees who work in areas with known, high-level noise exposures (TWAs of 85 dBA or greater). Audiometric data records will be retained for the duration of employment. Technicians performing the audiometric testing have been certified by the Council for Accreditation in Occupational Hearing Conservation (CAOHC), and follow all CAOHC guidelines for calibrating audiometric equipment and conducting tests.

CHECKLIST FOR AUDIOMETRIC EVALUATIONS

- Audiometers are in good operating condition.
- Audiometer output is not adjusted unless it is out of tolerances, and when adjusted both pre-adjustment and post-adjustment readings are permanently recorded.
- Biological (human subjects) calibration and equipment checks are conducted at least weekly during regular testing periods.
- Audiometric technicians use consistent testing methods.
- Technicians instruct employees to listen carefully and respond to the faintest tones detectable.
- Employees' auditory history information is updated annually.
- Employees receive immediate feedback from the audiometric technician about audiogram results.
- Employees receive written feedback from the reviewer about:
 - 1) Hearing status compared to normal for age,
 - 2) Hearing change over time, and
 - 3) Recommendations for better protection on and off the job, or for medical examination or treatment if appropriate.
- The audiogram reviewer looks for significant shifts at any frequency, not just the OSHA STS.
- Audiogram reviewers revise employees' reference baseline thresholds for threshold improvement as well as for persistent worsening.
- HCP personnel follow through with counseling and HPD retraining for employees with hearing deterioration.

4.4 Hearing Protection

Hearing protection is often the most simple and inexpensive method to prevent noise-induced hearing loss. It is important to note that selection, fitting, education, and wearing procedures are as important as the protectors. These factors have been shown to greatly affect the performance of hearing protectors. One method to test the effectiveness of the protector is to bring the worker into the audiometric test room and conduct a hearing test with and without the protector to measure *actual* attenuation as it is normally used. The OSHA Hearing Conservation Amendment requires that employees be provided with a choice of hearing protectors. HPDs must reduce noise exposure to time-weighted average levels of 90 dBA or below, or to 85 dBA or below for those workers who have suffered a significant threshold shift. The following is a table of suggested TWA ranges for HCP policy implementation (Royster and Royster, 1990):

TWA, dBA	Workers Included in the HCP	HPD Utilization	HPD Selection Options
<85	No	Voluntary	Free choice
85-89	Yes	Optional	Free choice
90-94	Yes	Required	Free choice
95-99	Yes	Required	Limited choice
>100	Yes	Required	Very limited choice

The NRR. Hearing protection devices have an attenuation value based on idealistic laboratory measurement. The Noise Reduction Rating (NRR) is subtracted from the employee's noise exposure level to indicate the maximum exposure reduction obtained by using the HPD. In general, studies of HPDs in actual use show that even properly trained personnel can count on receiving only about 50% of the NRR value in attenuation. DEM will use the conservative method of derating labeled NRRs by 50% in evaluating protection of HPDs. This derating factor is also used by OSHA to evaluate relative performance of HPDs compared to feasible engineering and/or administrative controls. Calculations using the NRR to estimate exposure and evaluate relative performance of HPDs are provided in Appendix B.

Availability and Provision. The DEM Safety Office will be responsible for recommending appropriate HPDs (plugs and/or muffs) based on attenuation requirements. A variety of appropriate types of protectors will be available to employees, as required by the OSHA standard. HPD recommendations, evaluation, fitting, and individual training will typically be done after the employee's annual audiogram, or when special circumstances warrant otherwise. The cost for providing the HPD will be paid by the employee's department.

CHECKLIST FOR HEARING PROTECTION

- HPD utilization in required areas is strictly and consistently enforced.
- Comfort, practicality, and actual field attenuation - not the NRR - are the primary criteria for selecting which HPDs will be utilized.
- Each employee is individually fitted with HPDs and trained in proper use and care.
- A *minimum* of two pair of earplugs and one earmuff will be made available (if applicable).
- HPDs shall be replaced on a regular basis.
- HPD distributors give each employee only the type of HPD fitted to that particular employee.
- Each employee's HPDs are rechecked during the audiometric evaluation for condition, fit, and correct placement.
- Employees are allowed to take earplugs home for use during off-the-job noise exposures.

4.5 Employee Training and Education

A complete hearing conservation training and education program is essential to the HCP. Different levels of the department's hierarchy will be addressed in some form of their role in the HCP.

Management will receive a copy of this plan to acquire a basic knowledge of hearing conservation, the requirements for an effective HCP, and policies to handle potential administrative problems.

The contract occupational physician will receive an outline of the department's HCP policies. The physician will also receive a description of the operation of the HCP, the physical work environment and noise exposures of each employee, the degree of noise hazard, and HPD utilization requirements.

All affected employees will receive, through training given by the DEM Safety Office, detailed information on the HCP to adequately handle concerns and complaints from employees, and so that they will have an understanding of why strict enforcement of HPD utilization is essential to the prevention of noise-induced hearing loss.

Finally, educational programs will be held for all employees included in the HCP. Though other types of educational activities can be used effectively to remind workers of hearing conservation needs, the annual audiometric testing will provide the most opportune time to present a personalized educational session to each employee, including a detailed review of the audiometric data, HPD utilization, and an opportunity for the employee to ask questions and voice concerns. Educational sessions designed for groups of ten or less are also very effective and will be utilized as needed. Educational material will be meaningful and relevant to the daily job functions and extra-curricular activities of the employee(s). Presentations will stress only the information employees need to know: the risk of noise-induced hearing loss, hearing conservation and the proper use of HPDs, and the department's HCP policies.

An educational program will be developed for each particular level of the department's hierarchy. An understanding of the role each level is to perform in the HCP is essential to the success of the program.

CHECKLIST FOR TRAINING, EDUCATION, AND MOTIVATION

- HCP personnel receive education about hearing loss and hearing conservation to understand the objective of the HCP.
- HCP personnel receive training on their function in the HCP.
- Employees annually attend updated educational programs which focus on why and how to protect their hearing on and off the job.
- Management supports the HCP by personal example, policy enforcement, and participation in educational programs.
- Staff are evaluated on their HCP participation during the department's annual personnel reviews.

4.6 Recordkeeping

The DEM HCP includes detailed and accurate recordkeeping as required by OSHA. The DEM Safety Office will maintain a record of all employee exposure measurements. Detailed audiometric records will be kept to determine whether a worker has incurred a significant threshold shift, or whether thresholds are decreasing gradually over time. Evaluations of engineering or administrative controls implemented to correct or reduce noise exposure problems will be also be documented. Both present and former employees, or representatives designated by the employee, will be provided all records upon written request.

The following information will be recorded for the HCP, both as a requirement of OSHA and as a means of monitoring and evaluating the program:

Noise Exposure Measurement Records:

- Detailed sound survey/dosimeter data, including:
 - Employee name, department, and location of survey

- Date and time of monitoring
- Equipment used (including calibrator)
- TWA and dose
- List of employees with TWAs ≥ 85 dBA
- List of departments/work areas with TWAs ≥ 85 dBA

Documentation of Engineering/Administrative Noise Controls:

- Results of engineering sound surveys (including detailed sound survey data as described above)
- Installations of noise controls completed and evaluation
- Regular maintenance performed on equipment

Audiometric Testing Records:

- Employee audiometric records (retained for duration of employment for OSHA indefinitely for Worker Compensation), including:
 - Name, age, department, job classification, TWA exposure
 - Date of audiogram
 - Name of audiometric technician
 - Audiometer make, model, serial number, and date of last calibration
 - Audiometric history information for each employee in the HCP
 - Annual history updates
 - Annual otoscopic checks
 - Pre-employment or pre-exposure audiograms
 - Termination audiogram
- Supporting records for audiometric testing, including
 - Technician's certification credentials
 - Audiometer make, model, and serial number
 - Audiometer acoustic and exhaustive calibration records
 - Biological calibration check records of audiometer
 - Background sound levels in audiometric test room
- Documentation of audiogram review and follow-up actions:
 - Review of each audiogram by CAOHC-certified technician
 - Credentials of audiologist or physician reviewer
 - Reviewer's follow-up recommendations
 - Documentation of employee's written notification of STS
 - Employee's signature indicating OSHA STS follow-up
 - Documentation of HPD utilization enforcement after STS

Hearing Protection Records:

- Date of initial HPD fitting for each employee
- Brand and size of HPD fitted (in each ear if appropriate)
- Employee's signature indicating training in HPD use and care
- Documentation of EHSS supervision of correct HPD use (periodic on-site inspections)
- NRR and TWA calculations showing HPD adequacy
- Dates of HPD reissuing , brand, and size reissued

- Annual documentation at time of audiogram that:
 - Employee's HPD is correct size and in good condition
 - Employee can demonstrate proper insertion and use of HPD
- List of acceptable HPDs for particular TWA ranges

Employee Training and Education Records:

- Outline of annual educational program content
- Names of presenters and individual credentials
- List of employees attending each educational seminar

Program Evaluation Records:

- Documentation of annual review of noise exposure measurements, hearing protector performance and adequacy, and review of employee audiometric data.
- Record of proposed changes and/or additions to HCP guidelines and practice

CHECKLIST FOR RECORDKEEPING

- A report of the noise survey findings is available for review.
- Representative TWAs have been recorded for all noise-exposed employees and these exposure measurement records are retained for two years.
- Dominant noise sources and planned/implemented solutions have been documented.
- Audiometric test records are retained for the duration of the affected employee's employment.
- HPD size and type data are recorded for annual evaluation at the audiometric testing session.
- Training and educational session content outlines will be kept and made accessible to all employees.

4.7 Program Evaluation

Records will also be useful in the evaluation of the effectiveness of the HCP. Audiometric data will be analyzed to determine if hearing protection devices and/or recommended engineering and administrative controls have been adequate in preventing noise-induced hearing loss.

The success of the DEM HCP will be evaluated following the widely accepted measure of having the level of employees incurring a significant threshold shift to be no greater than three to six percent, as suggested by Morrill and Sterrett (1981) and OSHA (1983).

Audiometric Data Base Analysis. Audiometric testing provides the only true measure of whether the HCP is successful in preventing occupational hearing

loss. Since small shifts in an individual employee's hearing are difficult to distinguish from normal measurement variability, Audiometric Data Base Analysis (ADBA) provides a means to evaluate audiometric trends for employees as a group. ADBA includes simple and useful procedures to assess whether a particular group is being adequately protected. The advantage of this practice is that inadequacies in the HCP can be detected early and corrective measures can be taken to prevent further hearing loss. Summaries of the ADBA will be reported to department management to illustrate how HPD utilization or implemented engineering/administrative controls can result in reduced occupational hearing loss.

CHECKLIST FOR PROGRAM EVALUATION

- A key individual oversees all phases of the HCP.
- HCP team members check that all tasks are accomplished and documented.
- HPDs are adequate for their intended use.
- HPD utilization is enforced.
- Active communication is maintained among HCP team members and with all personnel in the university hierarchy.
- Management holds personnel accountable for their HCP performance and gives praise or criticism as appropriate.
- Audiometric data base analysis is used to evaluate the HCP's effectiveness in preventing on-the-job hearing loss.

APPENDIX A

Noise Survey Checklists and Data Logs

SLM / NOISE DOSIMETER CALIBRATION LOG

Date:		Time:			
Calibrator:		Ser. #:			
Monitor	Monitor Serial No.	Battery Satis.	Init. Cal. Reading	Adjusted Reading	Post-Survey Cal. Reading
General Comments:					

Date:		Time:			
Calibrator:		Ser. #:			
Monitor	Monitor Serial No.	Battery Satis.	Init. Cal. Reading	Adjusted Reading	Post-Survey Cal. Reading
General Comments:					

Date:		Time:			
Calibrator:		Ser. #:			
Monitor	Monitor Serial No.	Battery Satis.	Init. Cal. Reading	Adjusted Reading	Post-Survey Cal. Reading
General Comments:					

CALIBRATION DATA LOG ENTRIES:

The following measurement techniques and data entry instructions are explained in detail in the "Sound Measurement" chapter of the **Noise and Hearing Conservation Manual** by Berger, Ward, Morrill, and Royster (1991).

Prior to calibrating the Sound Level Meter/Noise Dosimeter it is important the equipment have an opportunity to approach the ambient temperature of the area to be measured to assure accurate measurements.

Record calibration data in the log, including initial calibration reading and adjusted calibration reading (see SOPs of noise monitoring equipment for calibration instructions).

During calibration of the equipment record the following:

- 1) Serial numbers of meter and microphone (if separate)
- 2) Indicate the battery check for each unit was satisfactory
- 3) The initial calibration data for the dosimeter and any subsequent adjusted level to obtain the required calibration level
- 4) At the conclusion of the noise survey, a post-survey calibration reading of the instrument should be taken. (If the instrumentation's reference has shifted more than ± 1.0 dBA then the survey data should be questioned)
- 5) Any unusual equipment responses or environmental conditions encountered should be indicated in the "General Comments" section of the log

The surveyor should sign and date all data log sheets (with a non-erasable pen).

NOISE SURVEY DATA LOG ENTRIES:

During the basic sound survey, the data obtained should be sufficient to estimate TWA ranges for all noise-exposed personnel.

The Noise Survey Log is set up to be used to record sound level data in a SLM sampling format and/or as a workstation dose measurement. To be used as a SLM sampling format the surveyor need only record the sound level measured at random intervals during the test. Time and Test Duration for each survey sample can be recorded, as well as the corresponding average, maximum, and peak sound level values. L_{avg} is the average sound level (dBA) computed from start of test (weighted). L_{max} is the highest dBA level sampled during the test (weighted). L_{pk} is the maximum instantaneous peak pressure during test (unweighted).

Dosimeter data for a particular area or workstation can be read directly from the noise dosimeters. Personal dosimeter data will be recorded separately in the noise dosimeter's software package. The TWA can be calculated from the % Dose by the equation:

$$TWA = 16.61 \log_{10}[D(\%)/100(\%)] + 90, \text{ dBA}$$

where D = noise dose for an entire shift. If the sampled period is for less than an entire shift, the dose must be corrected to a whole-shift equivalent value using the formula:

$$D(H^*) = D(\text{measured}) \times H^*/T^*$$

where T^* is the actual period sampled and H^* is the whole shift duration.

RECOMMENDED TOOLS AND INSTRUMENTS FOR SURVEY:

- 1) Sound level meter and/or noise dosimeter
- 2) Spectrum analyzer
- 3) Calibrator and calibration forms
- 4) Extra batteries and connector cables
- 5) Clipboard, paper, survey forms, extra pencils and pens, camera and film
- 6) Floor and equipment location markers (tape measure, chalk, masking tape)
- 7) Calculator and reference publications or tables that might be needed
- 8) Personal HPDs, safety glasses, safety shoes, etc.
- 9) Belt or lightweight vest to support a noise dosimeter and safety pins or velcro strips to secure the noise dosimeter microphone cable when needed
- 10) Windscreen for windy or drafty work areas or for microphone-damaging environments and a thin plastic cover for use in protecting the instruments from harmful environments
- 11) Foam sheets for use in isolating the equipment from vibrating surfaces or for padding the knees when conducting "low level" sound surveys
- 12) A small recorder for recording pertinent comments before, during, and after the survey

APPENDIX B

Exposure Estimation

CALCULATING ESTIMATED EXPOSURE

The NRR is designed to be subtracted from the measured C-weighted sound pressure level to give the estimated A-weighted exposure level under the HPD:

$$[\text{Noise level, dBC}] - [\text{NRR}] = \text{Estimated exposure, dBA}$$

If only the A-weighted exposure level is known, a correction factor of 7 dB must be subtracted from the NRR. This correction is necessary because the A scale does not adequately account for noise that is predominantly low-frequency where HPDs offer less protection. Estimated exposure is now determined by the equation:

$$[\text{Noise level, dBA}] - [\text{NRR}-7] = \text{Estimated exposure, dBA}$$

If both the dBA and dBC levels are measured, then the average “C minus A” difference for the noise environment can be used as the correction factor in place of 7 dB.

50% DERATING

In Appendix B of the Hearing Conservation Amendment, OSHA states that the adequacy of hearing protection devices shall be determined from the manufacturer’s labeled NRR or octave-band data. Guidelines have since been developed to assess relative performance of hearing protection devices to engineering and/or administrative controls. The guideline states that feasible noise controls should be implemented when “hearing protectors alone may not reliably reduce noise levels” to those specified in the noise standard. The performance of hearing protection devices is evaluated by derating the labeled NRR by 50%. Thus, the labeled value of the NRR is used to determine *adequacy* of HPDs, but that value is derated by 50% to measure *relative performance* of the protection afforded by HPDs compared to engineering and/or administrative controls. The 50% derating factor has no relationship to the 7-dB correction for A-weighted sound levels. So to calculate estimated exposure for questions of relative performance, the following equation would apply:

$$[\text{Noise level, dBA}] - [(\text{NRR} - 7) / 2] = \text{Estimated exposure, dBA}$$

APPENDIX C

Educational Program Content

TOPICS FOR HEARING CONSERVATION EDUCATIONAL PROGRAM:

- Basic physiology of the ear.
- How noise damages hearing.
 - Temporary threshold shift
 - Permanent threshold shift
- Consequences of hearing loss in everyday life:
 - Poor speech understanding/communication.
 - Work hazard (inability to hear alarms/warning signals).
 - Social isolation from friends and family.
 - Interference with leisure activities.
- Noise exposures that are hazardous:
 - On-the-job (sound survey results of facility/work area).
 - Off-the-job (gunfire, power tools, etc.).
- Engineering/administrative controls implemented or planned.
 - Types of controls implemented and their benefits.
 - Encouraging employee input and ideas.
- HPD choices for the employees' departments:
 - Wearing HPDs correctly and consistently.
 - How to care for and replace HPDs.
 - How to solve common HPD problems or complaints.
- Audiometric testing and evaluation
 - Purposes and procedures.
 - Understanding the audiogram results.
 - Hearing changes and inadequate protection.
 - Nonoccupational hearing loss detection.
- Ways to protect hearing on and off the job:
 - Wearing HPDs correctly and consistently.
 - Avoiding unnecessary exposures.
 - Utilizing engineering controls.
- The department's HCP policies:
 - The importance of the HCP.
 - HCP participation as a condition of employment.

- Final motivation:
 - How the HCP benefits employees.
 - How participation in the HCP is advantageous.
- Question and answer session.

EDUCATIONAL PROGRAMS SPECIFICALLY FOR MANAGEMENT:

- Effects of noise on hearing and productivity
- Requirements for an effective HCP
- Compliance with regulations
- Reduction of fears
- Actual/estimated HCP costs
- Estimated compensation costs
- Expected/potential and achieved benefits of the HCP
- Final motivation
 - Annual ADBA results
 - Potential costs of compensation for hearing loss
 - Safer and more acceptable working environment
 - HPD utilization and effectiveness studies
 - Audiometric findings for managers

EDUCATIONAL PROGRAMS SPECIFICALLY FOR EMPLOYEES:

- Effects of noise on hearing
- Hearing protection devices
- Audiometric evaluations
- The department's HCP policies
- Questions and answers
- Final motivation
 - Annual audiometric findings
 - Individual evaluation of HPD adequacy
 - Examples of permanent and temporary hearing loss
 - Annual ADBA findings for departments or groups
 - Influence by management and peers
 - Employee input into HCP decisions
 - Examples of worn and abused HPDs
 - Reward programs for HPD utilization

APPENDIX D

HEARING PROTECTION REQUIRED AREAS

WASTEC

1. Turbine Generator Room
2. Surface Condenser Area
3. Ash Pusher Area
4. All Air Compressors
5. Electrostatic Precipitators (1 and 2)
6. During Personal Blow Down
7. During Depressurization of Boilers 1,2 and 3* (All areas)
8. When working in the vicinity of Boiler #3 Fans
9. When blowing soot (This only applies to personnel working in the vicinity of the soot blower)
10. When operating various tools, such as a band saw or jackhammer
11. ID Fans 1, 2, & 3

LANDFILL

1. Air Compressor Building
2. Blowers at Wastewater Treatment Plant*
3. When operating the Gregory Poole Bulldozer
4. When operating the Tractor

*SPECIAL REQUIREMENTS OF HEARING PROTECTION DEVICES

Double hearing protection shall be worn in the following areas (i.e. earplugs covered by ear muffs)

1. Responding to a lifted safety
2. Working around the blowers at the Wastewater Treatment Plant.

APPENDIX E

OSHA Permissible Noise Exposure Limits

Duration (hours)	Decibels A-scale
8	90
6	92
4	95
3	97
2	100
1.5	102
1	105
0.5	110
0.25 or less	115

APPENDIX F

AUDIOMETRIC TESTING (AFFECTED EMPLOYEES)

All DEM employees will receive baseline and annual audiograms by qualified medical personnel.

APPROVED BY:

NAME	TITLE	DATE

REVISION HISTORY:

REVISION	DATE	SECTIONS	REASON

ANNUAL REVIEW:

NAME	TITLE	DATE

DISTRIBUTION:

DEPARTMENT/DIVISION	LOCATION

NEW HANOVER COUNTY
DEPARTMENT OF ENVIRONMENTAL MANAGEMENT

**Hot Work (Welding, Cutting, and Brazing) Written
Program**

**In accordance with 29 CFR 1910.252 Welding, Cutting, and Brazing
Standard**

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1.0 GENERAL REQUIREMENTS

Fire Prevention and Protection

Basic Precautions

The basic precautions for fire prevention while performing welding or cutting work are:

1. Fire Hazards: If the object to be welded or cut cannot be readily moved, take all movable fire hazards in the vicinity to a safe place.
2. Guards: If the object to be welded or cut cannot be readily moved and if all fire hazards cannot be removed, then use guards to confine heat, sparks, and slag, and to protect the immovable fire hazards (SEE SPECIAL PRECAUTIONS).
3. Restrictions: If the requirements of this section cannot be followed then welding and cutting is not to be performed.

Special Precautions

When the nature of the work to be performed requires the use of guards, certain additional precautions may be necessary:

1. Combustible Material: Whenever there are floor openings or cracks in the floor that cannot be closed, take special precautions so that no readily combustible materials on the floor will be exposed to sparks which might drop through the floor. Observe the same precautions with regard to cracks or holes in walls, open doorways and open or broken windows
2. Fire Extinguishers: Maintain suitable fire extinguishing equipment in a state of readiness for instant use.
3. Fire Watch:
 - A. Fire watchers are required whenever welding or cutting is performed in locations where other than a minor fire might develop, or any of the following conditions may exist.
 - Appreciable combustible material, in building construction or contents, closer than 35 feet to the point of operation.
 - Appreciable combustibles are more than 35 feet away, but are easily ignited by sparks.

- Wall or floor openings within a 35-foot radius expose combustible material in adjacent areas including concealed spaces in walls or floors.
 - Combustible materials are adjacent to the opposite side of metal partitions, walls, ceilings, or roofs and are likely to be ignited by conduction or radiation.
- B. Fire watchers are to have fire extinguishing equipment readily available and be trained in its use. They must be familiar with facilities for sounding an alarm in the event of a fire. They must watch for fires in all exposed areas, try to extinguish them only when obviously within the capacity of the equipment available, or otherwise sound the alarm. A fire watch must be maintained for at least a half-hour after completion of welding or cutting operations to detect and extinguish possible smoldering fires.

Authorization

Before cutting or welding is permitted, the Shift Supervisor, Safety Officer, or Maintenance Manager is to inspect the area for potential hazards and to designate precautions to be followed before granting authorization to proceed (HOT WORK PERMIT).

Prohibited Areas

Cutting or welding is not permitted in the following situations:

1. In areas not authorized by management.
2. In sprinklered buildings while such protection is impaired.
3. In the presence of explosive atmospheres (mixtures of flammable gases, vapors, liquids, or dusts with air), or explosive atmospheres that may develop inside uncleaned or improperly prepared tanks or equipment which have previously contained such materials, or that may develop in areas with an accumulation of combustible dusts.

NOTE: USE THE INDUSTRIAL SCIENTIFIC MX-251 TO DETERMINE IF A FLAMMABLE/EXPLOSIVE ATMOSPHERE EXISTS. IF THE MX-251 READS 10% OR MORE, NO WELDING OR CUTTING SHALL TAKE PLACE.

4. In areas near the storage of large quantities of exposed, readily ignitable materials such as chemical or paper products.

Ducts

Protect or shut down ducts and conveyor systems that might carry sparks to distant combustibles.

Combustible Walls

Where cutting or welding is done near walls, partitions, ceilings or roof of combustible construction, fire-resistant shields or guards are to be used to prevent ignition.

Noncombustible Walls

If welding is to be done on a metal wall, partition, ceiling or roof, precautions are to be taken to prevent ignition of combustibles on the other side, due to conduction or radiation, preferably by relocating combustibles. Where combustibles are not relocated, a fire watch on the opposite side from the work is to be provided.

Combustible Cover

DO NOT attempt welding or cutting on a metal partition, wall, ceiling or roof having a combustible covering nor walls or partitions of combustible sandwich – type panel construction.

Pipes

Do not undertake cutting or welding on pipes or other metal in contact with combustible walls, partitions, ceilings or roofs if the work is close enough to cause ignition by conduction.

2.0 RESPONSIBILITY

Manager/Supervisor

The Manager/Supervisor:

1. Is responsible for the safe handling of the cutting or welding equipment and the safe use of the cutting or welding process.
2. Determines the combustible materials and hazardous area present or likely to be present in the work location.
3. Protects combustibles from ignition as following:
 - Having the work moved to a location free from dangerous combustibles.

- If the work cannot be moved, have the combustibles moved to a safe distance from the work or have the combustibles properly shielded against ignition.
 - See that cutting and welding are so scheduled that plant operations that might expose combustibles to ignition are not started.
4. Authorizes the cutting or welding operation (HOT WORK PERMIT).
 5. Determines that the cutter or welder has his/her approval that conditions are safe before beginning work.
 6. Determines that fire protection and extinguishing equipment are properly located at the site.
 7. Where fire watches are required, sees that they are available at the site.

3.0 WELDING OR CUTTING CONTAINERS

Used Containers

No welding, cutting or other hot work is to be performed on used drums, barrels, tanks or other containers until they have been cleaned so thoroughly as to make absolutely certain that there are no flammable materials present or any substance such as petroleum products, greases, tars, acids, or other materials when subjected to heat, might produce flammable or toxic vapors. Any pipe lines or connections to the drum or vessel must be disconnected or blanked.

Venting and Purging

All hollow spaces, cavities or containers are to be vented to permit the escape of air of gases before preheating, cutting or welding. Purging with inert gas is recommended.

4.0 PROTECTION OF PERSONNEL

Railing

A welder or helper working on platforms, scaffolds, or manlift must use protection against falling. This may be accomplished by the use of railing, safety harness/lanyard, or other personal fall arrest systems.

Accidental Contact

When arc welding is to be suspended for any substantial period of time, such as during lunch, all electrodes must be removed from the holders and the holders carefully located so that accidental contact cannot occur and the machine must be disconnected from the power source. When arc welding activities have been suspended for the shift or overnight, the welder and/or helper shall transport the welder back to the designated storage area.

Torch Valve

In order to eliminate the possibility of gas escaping through leaks or improperly closed valves, after gas welding or cutting, the torch valves are to be closed and the gas supply to the torch shut off.

Welding Cables

Welders are to locate welding cable and other equipment so that they are clear of passageways, ladders, stairways, and any water that may be on the plant floor.

5.0 PERSONAL PROTECTIVE EQUIPMENT

Eye Protection

Selection

1. Helmets or hand shields must be used during all arc welding or cutting operations. Helpers or attendants must use proper eye protection.
2. Goggles or other suitable eye protection shall be used during all gas welding or oxygen cutting operations. Spectacles without side shields, with suitable filter lenses, are permitted for use during gas welding operations on light work, for torch brazing or for inspection.
3. All operators and attendants of resistance welding or resistance brazing equipment shall use transparent face shields or goggles, depending on the particular job, to protect their faces or eyes, as required.

Specification for protectors

1. Helmets and hand shields shall be made of a material which is an insulator for heat and electricity. Helmets, shields and goggles shall be not readily flammable and shall be capable of withstanding sterilization.
2. Helmets and hand shields shall be arranged to protect the face, neck and ears from direct radiant energy from the arc.

3. Helmets shall be provided with filter plates and cover plates designed for easy removal.
4. All parts shall be constructed of a material which will not readily corrode or discolor the skin.
5. Goggles shall be ventilated to prevent fogging of the lenses as much as practicable.
6. All glass for lenses shall be tempered, substantially free from stripes, lines, air bubbles, waves and other flaws. Except when a lens is ground to provide proper optical correction for defective vision, the front and rear surfaces of lenses and windows shall be smooth and parallel.
7. Lenses shall bear some permanent distinctive marking by which the source and shade may be readily identified.

Use the information in Appendix C for the selection of the proper shade numbers. These recommendations may be varied to suit the individual needs.

Protection from Arc Welding Rays

Where work permits, the welder should be enclosed in an individual booth painted with a finish of low reflectivity such as zinc oxide (an important factor for absorbing ultraviolet radiation) and lamp black, or shall be enclosed with noncombustible screens similarly painted. Booths and screens shall permit circulation of air at floor level. Workers or other persons adjacent to the welding areas shall be protected from the rays by noncombustible or flameproof screens or shields or shall be required to wear appropriate goggles.

Protective Clothing

Employees exposed to the hazards created by welding, cutting, or brazing operations shall be protected by personal protective equipment in accordance with the requirements of 1910.132. Appropriate protective clothing required for any welding operation will vary with the size, nature and location of the work to be performed.

6.0 WORKING IN CONFINED SPACES

As used herein, confined space is intended to mean a relatively small or restricted space such as a tank, boiler, pressure vessel.

Ventilation

Ventilation is a prerequisite to work in confined spaces. For ventilation requirements see DEM Confined Space Entry Program.

Securing Cylinders and Machinery

When welding or cutting is being performed in any confined spaces, the gas cylinders and welding machines shall be left on the outside. Before operations are started, heavy portable equipment mounted on wheels shall be securely blocked to prevent accidental movement

Lifelines

Where a welder must enter a confined space through a manhole or other small opening, means shall be provided for quickly removing him in case of emergency. When safety harnesses and lifelines are used for this purpose, they shall be so attached to the welder's body that his body cannot be jammed in a small exit opening. An attendant with a preplanned rescue procedure shall be stationed outside to observe the welder at all times and be capable of putting rescue operations into effect.

Electrode Removal

When arc welding is to be suspended for any substantial period of time, such as during lunch, all electrodes shall be removed from the holders and the holders carefully located so that accidental contact cannot occur and the machine disconnected from the power source.

Gas Cylinder Shutoff

In order to eliminate the possibility of gas escaping through leaks of improperly closed valves, after gas welding or cutting, the torch valves shall be closed and the fuel-gas and oxygen supply to the torch positively shut off at some point outside the confined area whenever the torch is not to be used for a substantial period of time, such as during lunch hour. Where practicable the torch and hose shall also be removed from the confined space.

Warning Sign

After welding operations are completed, the welder shall mark the hot metal or provide some other means of warning other workers.

7.0 HOT WORK PERMIT

Welding operations take place at the Department of Environmental Management. The lack of appreciation for proper safety procedures can result in the welding being a source of ignition. All welding requires a Hot Work Permit (Appendix A). Precautions are taken to minimize the possibility of fire. Such precautions include:

1. Removing or covering combustible materials;
2. Having appropriate fire extinguishers ready;
3. Establishing a fire watch during and at least 30 minutes after the work is completed.

APPENDIX A

HOT WORK PERMIT

HOT WORK PERMIT

**BEFORE INITIATING HOT WORK, CAN THIS JOB BE AVOIDED?
IS THERE A SAFER WAY?**

This Hot Work Permit is required for any temporary operation involving open flames or producing heat and/or sparks. This includes, but is not limited to: Brazing, Cutting, Grinding, Soldering, and Welding.

INSTRUCTIONS	PART 1				
<p>1. Shift Supervisor/Maintenance Manager/Safety Manager</p> <p>A. Verify precautions listed at right (or do not proceed with the work).</p> <p>B. Complete and retain PART 1.</p> <p>C. Issue PART 2 to person doing job.</p>	<p>Requirements within 35 ft. (11m) of work</p> <p><input type="checkbox"/> Flammable liquids, dust, lint and oily deposits removed.</p> <p><input type="checkbox"/> Explosive atmosphere in area eliminated.</p> <p><input type="checkbox"/> Floors swept clean.</p> <p><input type="checkbox"/> Combustible floors wet down, covered with damp sand or fire-resistive sheets.</p> <p><input type="checkbox"/> Remove other combustibles where possible. Otherwise protect with fire-resistive tarpaulins or metal shields.</p> <p><input type="checkbox"/> All wall and floor openings covered and area is barricaded.</p> <p><input type="checkbox"/> Fire-resistive tarpaulins suspended beneath work.</p> <p><input type="checkbox"/> Is proper PPE being worn?</p> <p>Work on walls or ceilings</p> <p><input type="checkbox"/> Combustibles on other side of walls moved away.</p> <p>Work on enclosed equipment</p> <p><input type="checkbox"/> Enclosed equipment cleaned of all combustibles.</p> <p><input type="checkbox"/> Containers purged of flammable liquids/vapors.</p> <p><input type="checkbox"/> Pressurized vessels, piping and equipment removed from service, isolated and vented.</p> <p><input type="checkbox"/> Has the space been permitted?</p> <p>Fire watch/Hot Work area monitoring</p> <p><input type="checkbox"/> Fire watch will be provided during and for 30 minutes after work, including any breaks.</p> <p><input type="checkbox"/> Fire watch is supplied with suitable extinguishers, and, where practical, charged small hose.</p> <p><input type="checkbox"/> Fire watch is trained in use of this equipment and in sounding alarm.</p> <p><input type="checkbox"/> Fire watch may be required for adjoining areas, above, and below.</p> <p><input type="checkbox"/> Monitor Hot Work area for 4 hours after job is completed.</p> <p>Other Precautions Taken</p> <p><input type="checkbox"/> _____</p> <p>_____</p>				
<p>HOT WORK BEING DONE BY:</p> <p><input type="checkbox"/> EMPLOYEE</p> <p><input type="checkbox"/> CONTRACTOR _____</p> <p>DATE _____</p> <p>LOCATION/BUILDING & FLOOR _____</p> <p>NATURE OF JOB _____</p> <p>NAME OF PERSON DOING HOT WORK _____</p> <p>I verify the above location has been examined, the precautions checked on the Required Precautions Checklist have been taken to prevent fire, and permission is authorized for this work.</p> <p>SIGNED: _____</p>	<div style="border: 1px solid black; padding: 5px; text-align: center; font-size: 24px; width: 50px; margin: 0 auto;">0281</div>				
<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 20%;">PERMIT EXPIRES:</td> <td style="width: 20%;">DATE</td> <td style="width: 20%;">TIME</td> <td style="width: 40%;">AM PM</td> </tr> </table>	PERMIT EXPIRES:	DATE	TIME	AM PM	
PERMIT EXPIRES:	DATE	TIME	AM PM		
<div style="border: 1px solid black; padding: 5px;"> <p>NOTE EMERGENCY NOTIFICATION ON BACK OF FORM. USE AS APPROPRIATE FOR YOUR FACILITY.</p> </div>					
<p>REQUIRED PRECAUTIONS CHECKLIST</p> <p><input type="checkbox"/> Available sprinklers, hose streams and extinguishers are in service/operable.</p> <p><input type="checkbox"/> Hot Work equipment in good repair.</p>					

WARNING!

HOT WORK IN PROGRESS WATCH FOR FIRE!

IN CASE OF AN EMERGENCY:

CALL: _____

AT: _____

WARNING!

APPENDIX B

PROGRAM EVALUATION AUDIT

YES	NO	N/A	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Are only authorized and trained personnel permitted to use welding, cutting or brazing equipment?
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Do all operators have a copy of the appropriate operating instructions and are they directed to follow them?
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Are compressed gas cylinders regularly examined for obvious signs of defects, deep rusting or leakage?
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Is care used in handling and storage of cylinders, safety valves, relief valves and the like, to prevent damage?
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Are precautions taken to prevent mixture of air or oxygen with flammable gases, except at a burner or in a standard torch?
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Are only approved apparatus (torches, regulators, pressure-reducing valves, acetylene generators, manifolds) used?
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Are cylinders kept away from sources of heat?
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Is it prohibited to use cylinders as rollers or supports?
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Are empty cylinders appropriately marked, their valves closed and valve-protection caps on?
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Are signs reading: DANGER - NO SMOKING, MATCHES, OR OPEN LIGHTS , or the equivalent posted?
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Are cylinders, cylinder valves, couplings, regulators, hoses and apparatus kept free of oily or greasy substances?
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Is care taken not to drop or strike cylinders?

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Unless secured on special trucks, are regulators removed and valve-protection caps put in place before moving cylinders?
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Are liquefied gases stored and shipped valve-end up with valve covers in place?
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Are employees instructed to never crack a fuel-gas cylinder valve near sources of ignition?
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Before a regulator is removed, is the valve closed and gas released from the regulator?
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Is red used to identify the acetylene (and other fuel gas) hose, green for oxygen hose, and black for inert gas and air hose?
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Are pressure-reducing regulators used only for the gas and pressures for which they are intended?
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Is grounding of the machine frame and safety ground connections of portable machines checked periodically?
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Are electrodes removed from the holders when not in use?
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Is it required that electric power to the welder be shut off when no one is in attendance?
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Is suitable fire extinguishing equipment available for immediate use?
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Is the welder forbidden to coil or loop welding electrode cable around his/her body?
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Are wet welding machines thoroughly dried and tested before being used?
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Are work and electrode lead cables frequently inspected for wear and damage, and replaced when needed?

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Do means for connecting cables' length have adequate insulation?
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	When the object to be welded cannot be moved and fire hazards cannot be removed, are shields used to confine heat, sparks and slag?
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Are fire watchers assigned when welding or cutting is performed in locations where a serious fire might develop?
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Are combustible floors kept wet, covered by damp sand or protected by fire-resistant shields?
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	When floors are wet down, are personnel protected from possible electrical shock?
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Before hot work is begun, are used drums, barrels, tanks and other containers so thoroughly cleaned that no substances remain that could explode, ignite or produce toxic vapors?
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Is it required that eye protection helmets, hand shields, and goggles meet appropriate standards?
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Are employees exposed to the hazards created by welding, cutting or brazing operations protected with personal protective equipment and clothing?
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Is a check made for adequate ventilation in and where welding or cutting is performed?
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	When working in confined spaces, are environmental monitoring tests taken and means provided for quick removal of welders in case of an emergency?
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Are gas cylinders stored away from stairways and electrical boxes and chained so as to prevent them from falling and damaging valves or regulators?

APPENDIX C

PROTECTION AGAINST ULTRAVIOLET RAYS

The following is a guide for the selection of the proper shade numbers of filter lenses or plates used in welding and cutting. Shades more dense than those shown for various operations may be selected to suite the individual's needs.

WELDING OPERATION	SUGGESTED SHADE #*
Shielded metal-arc welding (1/16, 3/32, 1/8, 5/32-inch electrodes)	10
Gas-shielded arc welding (ferrous)(1/16, 3/32, 1/8, 5/32-inch electrodes)	13
Gas-shielded arc welding (non ferrous)(1/16, 3/32, 1/8, 5/32-inch electrodes)	11
Shielded metal-arc welding (3/16, 7/32, 1/4-inch electrodes)	12
Shielded metal-arc welding (5/16, 3/8-inch electrodes)	14
Atomic hydrogen welding	10-14
Carbon arc welding	14
Soldering	2
Torch blazing	3 or 4
Light cutting (up to 1 inch)	3 or 4
Medium cutting (1-6 inches)	4 or 5
Heavy cutting (6 inches and over)	5 or 6
Light gas welding (up to 1/8 inch)	4 or 5
Medium gas welding (1/8 to 1/2 inch)	5 or 6
Heavy gas welding	6 or 8

NOTE:

In gas welding or oxygen cutting where the torch produces a high yellow light, it is desirable to use a filter lens that absorbs the yellow or sodium line in the visible light of the operation (spectrum). Some shades use optical density numbers and these are not the same as above.

APPENDIX D

COMMON WELDING PROCESSES

COMMON WELDING PROCESSES					
PROCESS	USED FOR	SHIELDING	SMOKE/FUME	LIGHT/RADIATION	SPECIFIC HAZARD
Stick (SMAW)	General purpose; more than 50% of all welding	Electrode coating	High	moderate-variable	Depends on electrode, e.g., low hydrogen-fluorides, stainless steel-nickel
MIG (GMAW)	High production /automation	Inert gas (argon, helium, CO ₂)	Moderate	High-especially with reflective metal and argon shield	Ozone, CO (with CO ₂ shield), stainless steel-chromium and nickel
TIG (GTAW)	High precision	Inert gas	Low	High	Ozone, light
Plasma (PAW)	Process can be used to weld, cut, metal spray	Gas	Moderate/high	Moderate/high	Noise, electrical shock, potential X-radiation
Sub Arc (SAW)	Horizontal welds, high production	Granular flux	Low	No visible arc unless have "breakthrough"	Generally low hazard
Gas Metal Arc (GMAW)	"Gouging," weld preparation	None	Very high	High	Noise, high fume levels
Flux Core (FCW)	High production /automation, e.g., MIG with flux filled wire	Wire filling with or without gas	High	Moderate/high	High fume levels
Oxyacetylene (OAW)	Thin to medium thickness metals, steel and non-ferrous in all positions	Filler rod coating	Low/moderate	Low	Compressed gas cylinders; depends on filler rod, e.g., silver brazing-cadmium

GLOSSARY WELDING OPERATIONS

- Ref. 1 Webster's Seventh New Collegiate Dictionary, G. & C. Merriam Co., 1971
- Ref. 2 Dorland's Illustrated Medical Dictionary, 25th edition, W. B. Saunders Co., 1974
- Ref. 3 Welding and Welding Technology, Richard L. Little, McGraw-Hill Book Co., 1973
- Ref. 4 Safety and Health in Arc Welding and Gas Welding and Cutting, NIOSH Publication No. 78-138, 1978
- Ref. 5 Accident Prevention Manual for Industrial Operations, 7th edition, National Safety Council, 1978
- Ref. 6 Safety and Health Reference Handbook for the Food and Beverage Industry, The Bosley Studios, 1979
- Ref. 7 Modern Safety and Health Technology, Russell De Reamer, John Wiley & Sons, 1980
- Ref. 8 Webster's Third New International Dictionary, G. & C. Merriam Co., 1971
- Ref. 9 U. S. Department of Labor—OSHA, General Industry Standards
- Ref. 10 Modern Welding, Althouse, Turnquist, Bowditch, The Goodheart-Willcox Co., Inc., 1970

ACETYLENE A colorless gaseous hydrocarbon $HC=CH$ made especially by the action of water on calcium carbide and used chiefly in welding and soldering and in organic synthesis. Ref. 1

ARC . . . a sustained luminous discharge of electricity across a gap in a circuit or between electrodes, to form an electric arc. Ref. 1

ARC-AIR CUTTING The electrode holder has passages so that compressed air can be ejected in line with or on the same axis as the carbon electrode. The power supply, as in single carbon arc welding, is dc; however, because of the penetration patterns resulting from straight polarity, reverse polarity is used. The carbon electrode acts as the positive pole, or the anode, because of the unequal heat distribution within the arc column in its three major areas, the cathode, the plasma, and the anode. More heat is liberated at the anode than at the negative pole, the cathode. This phenomenon, which is referred to as reverse polarity, is commonly used to cut stainless steel and steel; however, it is not suitable for cutting nickel. Ref. 3

ARC-OXYGEN CUTTING In recent years, a further adaptation of the air carbon arc torch has been made, replacing the carbon electrode with a hollow steel electrode. This steel tube is covered with a flux that protects the arc column, and the hollow inside provides a passage that directs the oxygen to the cutting area. Ref. 3

ARC WELDING Present-day shield welding is accomplished by producing an electric arc between the work to be welded and the tip of electrode. Ref. 3

ARC WELDING Fusing of metal by intense heat generated by an electric arc formed between a metal or carbon electrodes, or between the two pieces being welded. Ref. 6

ARC WELDING is a process for joining metals by heating with an electric arc or arcs with or without the application of pressure and with or without the use of filler metal. The process includes shielded welding which uses gas or a solid flux to blanket the weld. Arc welding is used to fabricate nearly all types of carbon or alloy steels, the common nonferrous metals, and is indispensable in the repair and reclamation of metallic machine parts. Ref. 5

BACKFLOW When oxygen gains entrance to the fuel gas system. Ref. 5

BASE METAL Metal to be welded, cut, or brazed. Ref. 10

BERYLLIUM A steel-gray light strong brittle toxic bivalent metallic element. Ref. 1

CARBON ARC CUTTING (CAC) The carbon electrode arc leaves a "clean" cut since no foreign metals are introduced at the arc. The standard arc welding generator and other items of arc welding station equipment may be used for carbon arc cutting. DC is always used. It should be adjusted for straight polarity (DCSP). Ref. 10

CARBON MONOXIDE A colorless, odorless, imperceptible poisonous gas, CO, formed by the incomplete combustion of carbonaceous material or may be normally occurring by-product of decomposition; it causes asphyxiation by combining reversibly with the blood hemoglobin. Ref. 2

CHROMIUM A blue-white multivalent metallic element found naturally only in combination and used especially in alloys and in electroplating. Ref. 1

CREEPING When a regulator shows a continuous creep, indicated on the low pressure (delivery) gage by a steady buildup of pressure when the torch valves are closed. Ref. 5

DERMATITIS Contact dermatitis, sometimes of the primary-irritant type, but usually of the delayed hypersensitivity type, caused by material handled by the patient in the course of his employment. Ref. 2

DILUTION VENTILATION Enough fresh air is added to the contaminated air that hazardous concentrations do not develop. Ref. 4

ELECTRODE A conductor used to establish electrical contact with a nonmetallic part of a circuit. Ref. 1

Arc welding is done with either a metallic or a carbon electrode. The carbon electrode is usually a solid carbon or a graphite pencil, 1/4 in. in diameter or larger, depending upon the amount of current used.

For gas-shielded metal arc welding, the electrode is a solid or flux-cored wire. For shielded metal arc welding, the electrode is a covered wire. Ref. 5

FILLER METAL Metal used as a filler in welding joints and in brazing. Ref. 3

FLASHBACK When a flash or a fire travels back up the fuel gas line. Ref. 3

FLUX A substance used to promote fusion, especially of metal or minerals. Ref. 1

GAS METAL ARC CUTTING (GMAC) An arc is struck between the electrode wire and the work. As the metal melts it is blown away by the flow of inert gas. The effectiveness of this cutting process is due to the scavenging action of the gas velocity. Ref. 10

GAS TUNGSTEN ARC CUTTING (GTAC) Gas tungsten arc cutting uses the principle of passing an electric arc through a quantity of gas and using a restricted outlet for this electric arc heated gas to flow through. The electric arc heats the gas to such a high temperature that it turns into plasma. Plasma is the fourth state of matter-not a gas, liquid, or solid. As plasma is formed, a great deal of heat is put into the gas and it is this heat plus extremely high sensible heat, which heats the base metal to the melting point. Temperatures as high as 60,000 degrees F. have been reached using this process. Ref. 10

GAS WELDING A gas-welding process unites metals by heating them with the flame from the combustion of a fuel gas or gases and sometimes includes the use of pressure and a filler metal. Ref. 5

GROUNDING CIRCUIT For arc welding or cutting, two welding leads, the electrode lead and the work lead, are required from the source of current supply. Usually, one lead is connected to the work and the other to the electrode holder. The work lead (cable) is the most satisfactory means of providing the return (ground) circuit to the welding machine, but in some cases operating conditions may require the use of a grounded steel structure. Ref. 5

INFRARED Lying outside the visible spectrum at its red end—used of thermal radiation of wavelengths longer than those of visible light. Ref. 1

IONIZING-RADIATION The five main kinds of ionizing radiation of concern are alpha (α), beta (β), gamma (γ), and X rays and neutrons. Ref. 7

KERATITIS Inflammation of the cornea. Ref. 2

MACULA A moderately dense scar of the cornea that can be seen without special optical aids, appreciated as a gray spot intermediate between a nebula and a leukoma. Ref. 2

MECHANICAL VENTILATION Exhaust fans, exhaust hoods, downdraft benches, etc. Ref. 4 and Ref. 5

METAL ARC CUTTING (MAC) Metal may be removed with the electric arc using metal electrodes. Most cutting electrodes use a covering that disintegrates at a slower rate than the metal center of the electrode. This action creates a deep recess at the arc end of the electrode and produces a jet action that tends to blow the molten metal away. Ref. 10

METAL FUME FEVER A disorder caused by the inhalation of metal fumes which affects individuals engaged in welding, soldering, and other hot metal operations. The symptoms include fever and chills which last about 24 hours. Ref. 6

NICKEL A nearly silver-white hard malleable ductile metallic element capable of a high polish and resistant to corrosion used chiefly in alloys and as a catalyst. Ref. 1

OXIDES OF NITROGEN The intense energy produced by the arc can create nitrogen oxides. The most significant form is nitrogen dioxide. This gas is mildly irritating to the eyes, nose, and upper respiratory tract at relatively low concentrations. It is hard to detect and dangerous concentrations can be inhaled without any discomfort, even to the point that injury to the lungs results. Ref. 4

OXYGEN Oxygen is a nonmetallic chemical element, designated by the symbol O, which can be found in a free state or in combination with the other elements in nature. Ref. 5

OZONE A triatomic form of gaseous oxygen, chemically designated by the symbol O_2 -is formed by ultraviolet radiation acting on oxygen in air. It is a highly toxic and irritating gas. Ref. 5

Ozone is a gas that is produced by the ultraviolet radiation in the air in the vicinity of arc welding and cutting operations. Ozone is very irritating to all mucous membranes, with excessive exposure producing pulmonary edema. Other effects of exposure to ozone include headache, chest pain, and dryness in the respiratory tract. Ref. 4

PLASMA-ARC CUTTING Plasma arc consists of an electronic arc, plasma gas, and gases used to shield the jet column.

Any high-current arc is comprised of plasma, which is nothing more than an ionized conducting gas. The plasma gas is forced through the torch, surrounding the cathode. The main function of the plasma gas is shielding the body of the torch from the extreme heat of the cathode. Any gas or mixture of gases that does not attack the tungsten or the copper cathode can be used; argon and argon mixtures are most commonly used. The plasma arc, or jet, has a controlled composition and can cut any metal since it is primarily a melting process. Plasma jet energy is virtually unlimited. The greater the power used, the greater the temperature for melting the metal. Ref. 3

REDUCING VALVE A device that reduces the pressure of oxygen or fuel gas coming from the cylinder, and maintains the correct pressure. Ref. 5

REGULATOR Instrument to maintain a uniform gas supply of both fuel gas and oxygen to the welding torch at the correct pressure. Each regulator (oxygen or fuel gas) should have a high pressure gage and a low pressure gage. Ref. 5

REVERSE FLOW CHECK VALVE A device to prevent backflow of oxygen into the fuel gas system. Ref. 5

SHIELDED METAL ARC CUTTING (SMAC) An arc cutting process using a covered metal electrode. Shielding is obtained by decomposition of the electrode covering.

SIDEROSIS Pneumoconiosis due to the inhalation of iron particles. Ref. 2

SHORT CIRCUIT A connection of comparatively low resistance accidentally or intentionally made between points on a circuit between which the resistance is normally much greater. Ref. 1

SWEETENED When an oxygen deficient atmosphere is enriched with oxygen. Ref. 5

THERMAL ENERGY Radiant heat, a form of electro-magnetic energy similar to light but of longer wavelength. Welding sources: hot metal, open flames. Ref. 5

TRICHLOROETHYLENE A mobile nonflammable liquid $\text{CHCl}_2\text{CHCl}_2$ obtained usually by heating symmetrical tetrachloroethane with hydrated lime and used chiefly as a solvent, a degreasing agent for metals, and in medicine as an inhalation analgesic and anesthetic. Ref. 8

ULTRAVIOLET Situated beyond the visible spectrum at its violet end—used of radiation having a wavelength shorter than wavelengths of visible light and longer than those of X-rays. Ref. 1

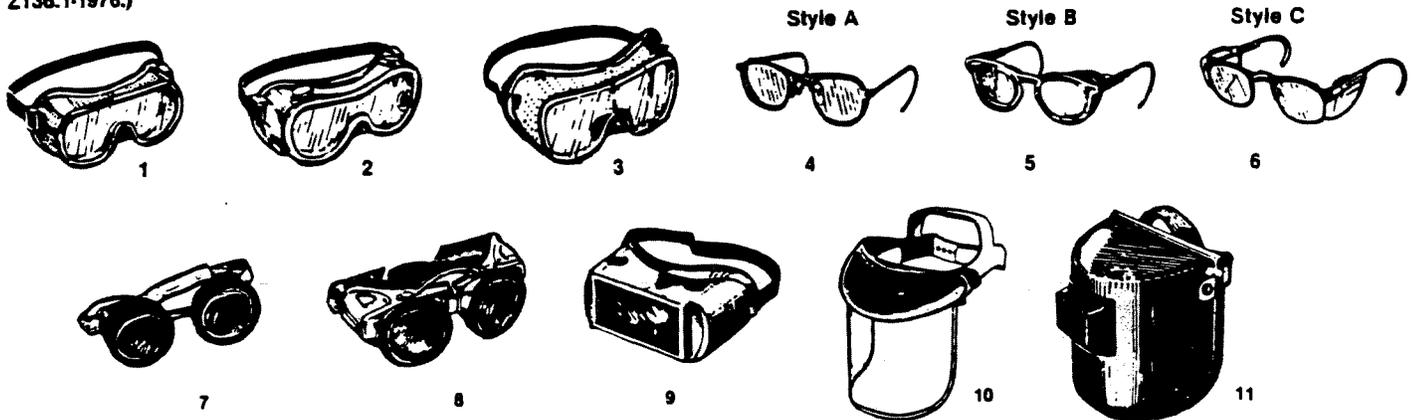
SELECTION OF SHADE NUMBERS FOR WELDING FILTERS

ANSI (Z87.1-1968)

WELDING OPERATIONS	SUGGESTED SHADE NUMBERS
• SHIELDED METAL-ARC WELDING 1/16, 3/32, 1/8, 5/32 IN., DIA., ELECTRODES	10
• GAS-SHIELDED ARC WELDING (NON-FERROUS) 1/16, 3/32, 1/8, 5/32 IN., DIA.,	11
• GAS SHIELDED ARC WELDING (FERROUS) 1/16, 3/32, 1/8, 5/32 IN., ELECTRODES	12
• SHIELDED METAL-ARC WELDING 3/16, 7/32, 1/4 IN., DIA., ELECTRODES	12
• 5/16, 3/8 IN., DIA., ELECTRODES	14
• ATOMIC HYDROGEN WELDING	10-14
• CARBON-ARC WELDING	14
• SOLDERING	2
• TORCH BRAZING	3 OR 4
• LIGHT CUTTING, UP TO 1 IN.,	3 OR 4
• MEDIUM CUTTING, UP TO 6 IN.,	4 OR 5
• HEAVY CUTTING, OVER 6 IN.,	5 OR 6
• GAS WELDING (LIGHT), UP TO 1/8 IN.	4 OR 5
• GAS WELDING (MEDIUM), 1/8 TO 1/2 IN.	5 OR 6
• GAS WELDING (HEAVY), OVER 1/2 IN.	6 OR 8

Selection Chart for Eye and Face Protectors for Use in Industry, Schools, and Colleges

This Selection Chart offers general recommendations only. Final selection of eye and face protective devices is the responsibility of management and safety specialists. (For laser protection, refer to American National Standard for Safe Use of Lasers, ANSI Z136.1-1976.)



- 1. GOGGLES, Flexible Fitting, Regular Ventilation
- 2. GOGGLES, Flexible Fitting, Hooded Ventilation
- 3. GOGGLES, Cushioned Fitting, Rigid Body
- 4. SPECTACLES, without Sideshields
- 5. SPECTACLES, Eyecup Type Sideshields
- 6. SPECTACLES, Semi-Flat-Fold Sideshields
- **7. WELDING GOGGLES, Eyecup Type, Tinted Lenses (Illustrated)

- 7A. CHIPPING GOGGLES, Eyecup Type, Clear Safety Lenses (Not Illustrated)
- **8. WELDING GOGGLES, Coverspec Type, Tinted Lenses (Illustrated)
- 8A. CHIPPING GOGGLES, Coverspec Type, Clear Safety Lenses (Not Illustrated)
- **9. WELDING GOGGLES, Coverspec Type, Tinted Plate Lens
- 10. FACE SHIELD, Plastic or Mesh Window (see caution note)
- *11. WELDING HELMET

*Non-sideshield spectacles are available for limited hazard use requiring only frontal protection.
 **See Table A1, "Selection of Shade Numbers for Welding Filters," in Section A2 of the Appendix.

APPLICATIONS		
OPERATION	HAZARDS	PROTECTORS
ACETYLENE-BURNING ACETYLENE-CUTTING ACETYLENE-WELDING	SPARKS, HARMFUL RAYS, MOLTEN METAL, FLYING PARTICLES	7, 8, 9
CHEMICAL HANDLING	SPLASH, ACID BURNS, FUMES	2 (For severe exposure add 10)
CHIPPING	FLYING PARTICLES	1, 3, 4, 5, 6, 7A, 8A
ELECTRIC (ARC) WELDING	SPARKS, INTENSE RAYS, MOLTEN METAL	11 (In combination with 4, 5, 6, in tinted lenses, advisable)
FURNACE OPERATIONS	GLARE, HEAT, MOLTEN METAL	7, 8, 9 (For severe exposure add 10)
GRINDING-LIGHT	FLYING PARTICLES	1, 3, 5, 6 (For severe exposure add 10).
GRINDING-HEAVY	FLYING PARTICLES	1, 3, 7A, 8A (For severe exposure add 10)
LABORATORY	CHEMICAL SPLASH, GLASS BREAKAGE	2 (10 when in combination with 5, 6)
MACHINING	FLYING PARTICLES	1, 3, 5, 6 (For severe exposure add 10)
MOLTEN METALS	HEAT, GLARE, SPARKS, SPLASH	7, 8, (10 in combination with 5, 6, in tinted lenses)
SPOT WELDING	FLYING PARTICLES, SPARKS	1, 3, 4, 5, 6 (Tinted lenses advisable; for severe exposure add 10)

CAUTION:

- Face shields alone do not provide adequate protection.
- Plastic lenses are advised for protection against molten metal splash.
- Contact lenses, of themselves, do not provide eye protection in the industrial sense and shall not be worn in a hazardous environment without appropriate covering safety eyewear.

Welding Health Hazards

There are many air contaminants generated during welding and cutting operations. Information on most of these substances may be obtained from the Material Safety Data Sheets provided by suppliers as required by OSHA's Hazard Communication Standard, 29 CFR 1910.1200.

OSHA has established Permissible Exposure Limits (PELs) for air contaminants which are contained in 29 CFR 1910.1000. In addition, some air contaminants have their own substance-specific regulation, e.g., lead - 29 CFR 1910.1025.

For additional information regarding OSHA regulations, contact your nearest OSHA Area Office.

TABLES OF WELDING AND ALLIED PROCESSES

TABLE A — Designation of Welding Processes by Letters

	Welding Process	Letter Designation
BRAZING	Infrared Brazing	IRB
	Torch Brazing	TB
	Furnace Brazing	FB
	Induction Brazing	IB
	Resistance Brazing	RB
	Dip Brazing	DB
	Twin-Carbon Arc Brazing	TCAB
	Block Brazing	BB
	Flow Brazing	FLB
GAS WELDING	Oxyacetylene Welding	OAW
	Oxyhydrogen Welding	OHW
	Pressure Gas Welding	PGW
	Air-Acetylene Welding	AAW
RESISTANCE WELDING	Resistance-Spot Welding	RSW
	Resistance-Seam Welding	RSEW
	Projection Welding	RPW
	Flash Welding	FW
	Upset Welding	UW
	Percussion Welding	PEW
ARC WELDING	Stud Welding	SW
	Plasma-Arc Welding	PAW
	Submerged Arc Welding	SAW
	Gas Tungsten-Arc Welding	GTAW
	Gas Metal-Arc Welding	GMAW
	Flux Cored Arc Welding	FCAW
	Shielded Metal-Arc Welding	SMAW
	Carbon-Arc Welding	CAW
	Bare Metal-Arc Welding	BMAW
	Gas-Shielded Metal-Arc Welding	GSSW
	Atomic Hydrogen Welding	AHW
	Twin-Carbon Arc Welding	TCAW
	Gas Carbon-Arc Welding	GCAW
Shielded Carbon-Arc Welding	SCAW	

Table A (Continued) - Designation of Welding Processes by Letters

OTHER PROCESSES	Thermit Welding	TW
	Laser Beam Welding	LBW
	Induction Welding	IW
	Electroslag Welding	EW
	Electron Beam Welding	EBW
	Nonpressure Thermit Welding	NTW
	Pressure Thermit Welding	PTW
SOLID STATE WELDING	Flow Welding	FLOW
	Ultrasonic Welding	USW
	Friction Welding	FRW
	Forge Welding	FOW
	Explosion Welding	EXW
	Diffusion Welding	DFW
	Cold Welding	CW
	Roll Welding	RW
	Die Welding	DW
	Hammer Welding	HW

TABLE B — Designation of Cutting Processes by Letters

	Cutting Process	Letter Designation
ARC CUTTING (AC)	Air Carbon-Arc Cutting	AAC
	Carbon-Arc Cutting	CAC
	Gas Tungsten-Arc Cutting	GTAC
	Metal-Arc Cutting	MAC
	Plasma-Arc Cutting	PAC
OXYGEN CUTTING (OC)	Chemical Flux Cutting	FOC
	Metal Powder Cutting	POC
	Oxygen-Arc Cutting	AOC
	Oxy-Fuel Gas Cutting	OFC
	Oxygen Lance Cutting	LOC
	Laser Beam Cutting	LBC

PROTECTION AGAINST ULTRAVIOLET RAYS

The following is a guide for the selection of the proper shade numbers of filter lenses or plates used in welding. Shades more dense than those shown for various operations may be selected to suite the individual's needs.

WELDING OPERATION	SUGGESTED SHADE NO.*
Shielded metal-arc welding — 1/16, 3/32, 1/8 5/32-inch electrodes	10
Gas-shielded arc welding (ferrous) — 1/16, 3/32, 1/8, 5/32-inch electrodes	13
Gas-shielded arc welding (non ferrous) — 1/16, 3/32, 1/8, 5/32-inch electrodes	11
Shielded metal-arc welding: 3/16, 7/32, 1/4-inch electrodes	12
5/16, 3/8-inch electrodes	14
Atomic hydrogen welding	10-14
Carbon arc welding	14
Soldering	2
Torch brazing	3 or 4
Light cutting, up to 1 inch	3 or 4
Medium cutting, 1 inch to 6 inches	4 or 5
Heavy cutting, 6 inches and over	5 or 6
Gas welding (light) up to 1/8 inch	4 or 5
Gas welding (medium) 1/8 inch to 1/2 inch	5 or 6
Gas welding (heavy) 1/3 inch and over	6 or 8

NOTE:

In gas welding or oxygen cutting where the torch produces a high yellow light, it is desirable to use a filter lens that absorbs the yellow or sodium line in the visible light of the operation (spectrum). Some shades use optical density numbers and these are not the same as above.

*The choice of a filter shade may be made on the basis of visual acuity and may therefore vary widely from one individual to another, particularly under different current densities, materials, and welding processes. However, the degree of protection from radiant energy afforded by the filter plate or lens when chosen to allow visual acuity will still remain in excess of the needs of eye filter protection. Filter plate shades as low as shade 8 have proven suitable radiation-absorbent for protection from the arc welding processes (ANSI Z49.1-1973).

APPROVED BY:

NAME	TITLE	DATE

REVISION HISTORY:

REVISION	DATE	SECTIONS	REASON

ANNUAL REVIEW:

NAME	TITLE	DATE

DISTRIBUTION:

DEPARTMENT/DIVISION	LOCATION

New Hanover County Landfill

Lockout/Tagout (LOTO) Written Program

In accordance with 29 CFR 1910.147

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1.0 PURPOSE

The purpose of this written program is to state the means required to accomplish compliance as it pertains to 29CFR 1910.147.

2.0 DEFINITIONS

“Affected” Employee - An employee whose job requires him/her to operate or use a machine or equipment on which servicing or maintenance is being performed under LOTO, or whose job requires him/her to work in an area in which such servicing or maintenance is being performed.

“Authorized” Employee - A person who locks or tags out machinery or equipment in order to perform servicing or maintenance on that machinery or equipment. An “affected” employee becomes an “authorized” employee when that employee’s duties include performing or maintenance or service covered under this section.

“Other” Employee – All other employees whose work operations are or may be in an area where energy control procedures may be utilized shall be instructed about the procedure relating to the attempts to restart or reenergize machines or equipment which are locked out or tagged out.

Blocking - Various methods used to ensure that stored energy will not result in an injury if released. These methods may include placing supports under a suspended load, blanking a line, placing supports under a hydraulic ram, placing a block in a fan, chaining a roll-up door, etc.

Capable of being locked out - An energy isolating device is capable of being locked out if it has a hasp or other means of attachment to which, or through which, a lock can be affixed, or it has a locking mechanism built into it. Other energy isolating devices are capable of being locked out, if lockout can be achieved without the need to dismantle, rebuild, or replace the energy isolating device or permanently alter its energy control capability.

Energized - Connected to an energy source or containing residual or stored energy.

Energy isolating device - A mechanical device that physically prevents the transmission or release of energy, including but not limited to be the following: a manually operated electrical circuit breaker; a disconnect switch; a manually operated switch by which the conductors for a circuit can be disconnected from all underground supply conductors, and, in addition, no pole can be operated independently a line valve; a block; and any similar device used to block or isolate energy. Push buttons, selector switches, and other control circuit type devices are not energy isolating devices.

Energy source - Any source of electrical, mechanical, hydraulic, pneumatic, chemical, thermal, or other energy.

Heavy Equipment - Any of the motorized equipment used at the landfill including bulldozers, compactors, tractors, motor graders, scrapers, excavators, front-end loaders, trucks, etc.

Hot Tap - A procedure used in the repair, maintenance and services activities which involves welding on a piece of equipment (pipelines, vessels or tanks) under pressure, in order to install connections or appurtenances. It is commonly used to replace or add sections of pipeline without the interruption of services for air, gas, water, steam, and petrochemical distribution systems.

Lockout Device - A device that utilizes a positive means such as a lock and hold, an energy isolating device, in a safe position, which prevents the energizing of a machine or equipment. Included are blank flanges and bolted slip blinds.

LOTO Permit - A form used to document all aspects of the standard program, including who, when, where, what, how and why LOTO was applied and/or removed. Completed permit forms must be retained for three (3) years.

LOTO Log – A notebook/binder used to keep all permit forms filled out as per the three year OSHA requirement. This log is kept in the garage where the heavy equipment manuals are located.

Normal Production Operations - The utilization of a machine or equipment to perform its intended production function.

Servicing and/or Maintenance - workplace activities such as constructing, installing, setting up, adjusting, inspecting, modifying, and maintaining and/or servicing machines or equipment. These activities include lubrication, cleaning or un-jamming of machines or equipment and making adjustments or tool changes, where the employee may be exposed to the unexpected energizing or startup of the equipment, or release of hazardous energy.

Setting Up - Any work performed to prepare a machine or equipment to perform its normal production operation.

Tagout - The placement of a tagout device on an energy isolating device, in accordance with established procedures. This indicates that the energy isolating device and the equipment being controlled may not be operated until the tagout device is removed.

Tagout Device - A prominent warning device, such as a tag and a means of attachment, which can be securely fastened to an energy isolating device in accordance with an established procedure, to indicate that the energy isolating device and the equipment being controlled may not be operated until the tagout device is removed.

3.0 APPLICATION

LOTO will be utilized by all “authorized” personnel during equipment repair, installation and routine servicing. All employees shall follow LOTO procedures:

- During servicing and/or maintenance and cleaning of machines and equipment.
- During removal or bypassing of a machine guard or other safety device.
- When placing any part of their body into an area where work is actually performed (point of operation) or a danger zone with respect to a machine’s normal operating cycle.
- During installation of new equipment or modification or relocation of existing equipment.

Employees may be required to perform electrical and mechanical machinery repairs or cleaning of equipment and machinery. In cases where electrical repairs are necessary, employees trained in all aspects of Electrical Safety Related Work Practices (29CFR 1910.335) shall make the required repairs.

4.0 PROGRAM RESPONSIBILITIES

The Landfill Manager and NHC Safety Officer shall oversee the LOTO program at the landfill facility. Their duties include:

- Monitoring and implementing the program
- Assurance that energy control procedures are developed
- Assurance that equipment LOTO procedures are inspected and updated as required
- Assurance of annual employee training
- Documenting and maintaining records of all training

It is also the responsibility of the NHC Safety Officer to keep records of employee training as they pertain to LOTO. As a management employee with departmental responsibilities, he/she shall monitor the program for daily compliance with the requirements of the LOTO standard.

All employees shall take the steps necessary to comply with the requirements of the standard. If necessary, disciplinary action may be taken up to and including termination of employment.

5.0 GENERAL

Energy Control Program

The Energy Control Program consists of procedures, employee training and periodic inspections. The inspections help ensure that before an employee performs any maintenance or servicing on a machine or equipment it will be isolated from all energy sources, and rendered inoperative. This will prevent unexpected energizing and

possible start-up or release of stored energy that could occur and cause injury to an employee.

All machinery must be evaluated. All employees that maintain, service, or perform repair work on machines or equipment must be instructed in the safety significance of the LOTO procedures.

Energy Control Survey

The initial facility survey (Appendix A) identified the number and types of machines and equipment in the work place. This survey has also determined the energy sources in the facility. At the landfill these energy sources include, but are not limited to:

- Electrical
- Hydraulic
- Mechanical
- Pressurized fluids
- Pneumatic (Compressed Air or Gases)

The information gathered in the survey of machines and equipment was used to determine the proper energy control procedures and the devices necessary to maintain the equipment in a “zero” energy state once LOTO has been applied. Standard operation procedures (see County LOTO program) shall apply for all but the Landfill heavy equipment. For all standard LOTO situations, employees shall document the work on the LOTO Permit Form (Appendix B).

The survey information has been used to develop a specific written energy control procedure for the cleaning and servicing of Landfill heavy equipment.

Protective Materials and Hardware

“Authorized” employees who implement the energy control procedures shall have the LOTO devices needed to achieve equipment de-energizing. Examples of the energy control devices used at the landfill include:

- Locks, tags, plug cover boxes, valve cover boxes, chains, wedges, safety blocks, hasps, or other hardware that are used for isolating, securing or locking of machines or equipment from energy sources.

Where the energy control devices are used, they must be properly sized and tagged with DANGER – DO NOT OPERATE or DANGER – EQUIPMENT LOCKOUT tags to serve as notice that the device must not be removed. The tags must not be used for other purposes and must be maintained for ready use. LOTO devices are uniquely identified, and must be the only device(s) used for controlling energy. They must not be used for other purposes. They must meet the following requirements:

Durability

- LOTO devices must be capable of withstanding the environment to which they are exposed for the maximum period of time that exposure is expected
- LOTO devices must be constructed and printed so that exposure to weather conditions or wet and damp locations will not cause the tag to deteriorate or the message on the tag to become illegible
- Tags must not deteriorate when used in corrosive environments, such as areas where acid and alkali chemicals are handled and stored

Standardization

- LOTO devices are standardized within the facility in at least one of the following criteria: color, shape, size, and additionally, the tagout devices print and format must be standardized

Substantiation

- Tagout devices, including their means of attachment, must be substantial enough to prevent inadvertent or accidental removal
- Tagout device attachment means must be of a non-reusable type attachable by hand, self-locking, and non-releasable with a minimum unlocking strength of no less than 50 pounds and having the general design and basic characteristics of being at least equivalent to a one-piece, all-environment-tolerant nylon cable tie.

Identification

- LOTO devices must indicate the identity of the employee applying the devices(s). Lock out devices will be marked with a self-adhesive label on the lock. Tagout devices must warn against hazardous conditions if the machine or equipment is energized and must include an appropriate legend, such as the following:

DANGER
Equipment Lock-Out

DANGER
Equipment Locked Out
Do Not Remove

6.0 EQUIPMENT PROCEDURES

With information obtained in the facility survey, an energy control procedure was developed that applies to each piece of heavy equipment. Copies of this procedure will be maintained and updated annually. The following events shall be cause for review and/or revision of the energy control procedures:

- Additions of new machines or equipment, or removal of those which are part of a process
- Modification of current machines or equipment including machine/equipment location, energy sources applicable to each machine or item of equipment, means of disconnecting energy from machine/equipment, and removal or addition of machine/equipment parts
- Noted deficiencies in programs or procedures
- Change in LOTO standard or interpretation thereof by the Occupational Safety and Health Administration

7.0 PERIODIC/ANNUAL INSPECTIONS

Documented inspections (Appendix C) of the energy control program and procedures are conducted at least annually. The inspections are conducted to ensure that the procedure and the requirements of this program are being followed. The periodic inspection will be performed by an “authorized” employee other than the one(s) utilizing the energy control procedure being inspected, or the Landfill Safety Audit Committee. The periodic inspection includes a review, between the inspector and “authorized” employee, of that employee’s responsibilities under the energy control procedure being inspected, and a review of the program, including documentation of training. Any deviations or concerns identified shall be reviewed by the Landfill Safety Audit Committee. Suggested recommendations will be approved by the Landfill Manager. The inspections shall be:

- Certified by the inspecting official
- The certification must identify the machine/equipment, on which the energy control procedure was in question
- The certification must include the date of the inspection
- The certification must include the employees participating in the inspection

8.0 TRAINING AND COMMUNICATION

All “authorized”, “affected” and “other” employees shall be instructed in the significance of the LOTO procedures. Upon the successful completion of annual employee training and employee evaluation, “authorized” employees shall be issued a lock, tag, hasp, and/or other isolating devices.

Annual training will be provided to all employees to ensure that the purpose and function of the energy control program is understood by all employees. Training will include the following aspects:

- “Authorized” employees shall be trained on the recognition of applicable hazardous energy sources, the type and magnitude of the energy available in the workplace, and the methods and means necessary for energy isolation and control
- “Authorized and affected” employees shall be made aware of the types and magnitude of hazardous energy in the workplace

- “Authorized and affected” employees shall be informed of the methods to determine the physical locations of energy isolation devices
- “Affected” employees shall be instructed as to the fact that they are unqualified and prohibited by the standard to affix any energy isolation devices to machinery or equipment
- “Other” employees working in an area where energy control procedures are being used are to be instructed about the procedure, and the prohibition to restart or re-energize machines or equipment which are locked or tagged out

Retraining is provided for all “authorized” employees whenever there is a change in their job assignments, a change in machines, equipment or processes that present a new hazard, or when there is a change in the energy control procedures. Retraining is conducted whenever a periodic inspection reveals that there is reason to believe that there are deviations or inadequacies in an employee’s knowledge of the energy control procedures.

The retraining must establish an employee’s proficiency and introduce new or revised control methods and procedures, as necessary. Retraining must be documented including employee’s name and dates of training.

LOTO must be performed only by the “authorized” employees who are performing the servicing or maintenance. All equipment undergoing major repair, renovation or modification must be equipped to accept LOTO devices.

Training on Use of Tags:

Employees are instructed as part of their initial LOTO training, and in all subsequent training, that tags are for informational purposes only. Tags can never afford the level of protection provided by locks. It shall also be explained to employees that although allowed by the federal LOTO standard, tagout is not recognized by the Occupational Safety and Health Administration (OSHA) as an effective means of energy control in most cases. Thus, tagout will always be used in conjunction with lockout for energy isolation of machines and equipment where possible. Employees are instructed that tags are to be affixed at the energy disconnect point in all cases. These highly visible tags are to be signed and dated by each employee affixing an energy isolation device. Tags may be used alone “IF” there is no immediate lockout point. Employees will be trained to a standard that this practice will be treated as a lockout device.

9.0 CORD & PLUG CONNECTED EQUIPMENT

All cord and plug equipment at the New Hanover County Landfill will be treated in the same manner as any other item of machinery or equipment. Cord and plug connected equipment shall be locked out with the use of plug cover boxes suitable for the equipment. Employees are informed as part of their LOTO training that cord and plug connected equipment presents the same threat to their safety as any other piece of

machinery or equipment. Only tools that are strictly “hand held” and are not fastened in any way are exempt.

10.0 APPLICATION OF CONTROL AND PROGRAM CONTROLS

Energy control actions shall be conducted in the following sequence:

1. Before an “authorized” employee begins to perform maintenance or service on a machine or piece of heavy equipment; the “authorized” employee must have knowledge of the type and magnitude of the energy, the hazards of the energy to be controlled, and the method or means to control the energy.
2. Maintenance, service employees, and contractors will contact the Landfill Manager or designee to discuss and log the proper LOTO procedure associated with the proposed maintenance/repairs. A record will be maintained in the LOTO binder located on the shelves in the garage where the heavy equipment manuals are located. The machine or equipment must be turned off or shut down using the procedures established for the machine or the equipment. An orderly shutdown must be utilized to avoid any additional or increased hazards to employees as a result of equipment stoppage.
3. All energy isolating devices that are needed to control the energy to the machine or equipment must be physically located and operated in such a manner as to isolate the machine or equipment from the energy source(s).

11.0 RELEASE FROM LOCKOUT OR TAGOUT

The following actions shall be taken by the Authorized Employee before any LOTO devices are removed and energy is restored to any machine or equipment:

1. The work area shall be inspected to ensure that non-essential items have been removed and to ensure that the machine or equipment components are operationally intact
2. The work area shall be checked to ensure that all employees have been safely positioned or removed. After LOTO devices have been removed and before a machine or equipment is started, “affected” employees must be notified that the LOTO device(s) have been removed.
3. Each LOTO device shall be removed from every energy isolating device by the “authorized” employee who applied the device
4. **Exception:** When the “authorized” employee who applied the LOTO device is not available to remove it, that device may be removed under the direction of the Landfill manager or supervisor following the specific procedures for such removal provided herein (Appendix D, Absent or Missing Employee Report). The designee must ensure that the removal provides equivalent safety to the removal of the device by the “authorized” employee who applied it. The procedure for removal includes the following elements:
 - o Verify that the “authorized” employee who applied the device is not at the facility

- Make all reasonable effort to contact the “authorized” employee to inform him/her that the LOTO device will be removed
- Ensure that the “authorized” employee has this knowledge before he/she resumes work at the facility

12.0 ADDITIONAL REQUIREMENTS

In situations in which LOTO devices must be temporarily removed from the energy isolating device and the machine or equipment energized to test or position the machine, equipment or component thereof, the following sequence of actions shall be followed:

1. Clear the machine or equipment of tools and materials
2. Remove employees from the machine or equipment area
3. Remove the LOTO device(s)
4. Energize and proceed with testing or positioning
5. De-energize all systems and reapply energy control measures to continue the servicing and/or maintenance

Group Lockout

The procedure for group LOTO at the New Hanover County Landfill requires all “authorized” employees to place their own individual LOTO devices on machines or equipment being serviced, repaired, maintained or setup. It has been determined that **no** situations exist which require that one “authorized” employee be given the responsibility for LOTO responsibilities of others.

Personnel Changes

During personnel changes, LOTO procedures will be reviewed between incoming and outgoing personnel to ensure the continuity of LOTO protection. This exchange will include provision for the orderly transfer of LOTO device protection between off-going and on-coming employees. Equipment will not be left unlocked during personnel changes. The following steps shall be taken when situations arise that require exchanging LOTO devices:

1. Make arrangements with designate “authorized” employee to transfer his/her lock to the identified equipment
2. Inform “authorized” employee of conditions and hazards of equipment
3. Transfer LOTO devices
4. On-coming “authorized” employee shall verify the isolation and zero energy state of equipment by testing all operational controls
5. On-coming “authorized” employee shall return operations controls to the neutral or off position after verifying that all stored energy has been released
6. Continue repair or servicing of the machine or equipment

Contractors

All Contractors are required to abide by the New Hanover County DEM safety program. All contractors will be informed of the New Hanover County DEM LOTO Program and all relevant actions and procedures. These contractors are to provide like information concerning their LOTO program and procedures to the Landfill Manager. If it becomes necessary for New Hanover County DEM personnel to engage in machine or equipment repair, modification, removal, etc. with the help or aid of contracted help, LOTO procedures shall be coordinated by the Landfill Manager to ensure compliance with the standard and employee safety.

APPENDIX A

New Hanover County Landfill LOTO Energy Control Survey

Date of Survey: 11/20/09

Type of Machine or Equipment in the Workplace	Quantity	Energy Sources					Energy Device Needed to Maintain Zero Energy State
		Electric	Hydraulic	Mechanical	Pressurized Fluids	Pneumatic (compressed gases)	
Breaker Boxes/Control Boxes	24	X					Lock, Breaker Locks
Generators	3	X		X			Tag for diesel/lock for scale house generator
Ventrac Mower	1	X	X	X			Tag
Riding Lawn Mower	2	X		X			Tag
Air Compressors	3	X		X		X	Lock
Chop Saw	1			X			Lock
Chain Saw	1			X			Tag
Disk Grinder	1	X		X			Lock
Drill Press	1	X		X			Cord Lock
Heavy Equipment	12	X	X	X	X		(Lock, except Motorgrader and blue forklift. They get a tag)
Roll-Off Truck	1	X	X	X	X		Lock
Water Truck	1	X	X	X	X		Tag
Pick-up Trucks	8	X	X	X	X		Tag
Ford Tractor	1	X	X	X	X		Tag
Diesel Fill Station	1	X		X			Lock
WWTP Blowers	3	X		X			Lock
Lagoon Aerators	4	X		X			Lock
Sand Filter	1	X		X			Lock
WWTP Flow Meter	1	X					Lock
Spray Irrigation Hydraulic Tanks	2	X	X		X		Lock
Spray Irrigation Pumps	2	X		X			Lock
Submersible Pumps	15	X		X			Lock
Power Washer	2	X		X	X		Cord Lock
Saw Zall	1	X		X			Cord Lock
Radial Saw	2	X		X			Cord Lock
Corded Disk Grinder	1	X		X			Cord Lock
Corded Drill	2	X		X			Cord Lock
Weed Eater	4			X			Tag
Ban Saw	1	X		X			Cord Lock
Water Heater	1	X					Lock
HVAC System	1	X					Lock

Person Conducting Survey: Samuel Hawes

Signature: _____

APPENDIX C

**New Hanover County Landfill
LOTO Inspection Form**

Date of Inspection: _____

Name (s) of Person Conducting the Inspection: _____

Description of Work being Inspected: _____

Authorized Employee (s) Conducting the Work: _____

Are Proper LOTO Controls being Utilized? _____

Are Proper Procedures being Followed? _____

Is Documentation of Training up-to-date for the Authorized Employee (s) Conducting the Work?

Deviations or Concerns Determined: _____

Inspection Recommendations: _____

APPENDIX D

PROCEDURES FOR ABSENT OR MISSING "AUTHORIZED" EMPLOYEE

If the "authorized" employee who applied the lockout tagout device on a piece of equipment is not available to remove it, then the removal must be made by the direction of Management.

Date: _____

1. Equipment or Machinery: _____

2. Absent or Missing "authorized" employee: _____

3. Absent or missing "authorized" employee has been contacted and is aware that his/her lockout device has been removed?

Yes

No

4. If NO, list ways management has attempted contact the absent or missing "authorized" employee: _____

5. Results: _____

6. Does the absent or missing "authorized" employee know his/her lock has been removed?

Yes No

7. Has another "authorized" employee placed his/her lock and tag on the absent or missing "authorized" employee's equipment in question?

Yes No

8. If so, who? _____

I certify that these procedures have been followed.

(Manager/ Shift Supervisor)

APPROVED BY:

NAME	TITLE	DATE

REVISION HISTORY:

REVISION	DATE	SECTIONS	REASON

ANNUAL REVIEW:

NAME	TITLE	DATE

DISTRIBUTION:

DEPARTMENT/DIVISION	LOCATION

NEW HANOVER COUNTY
DEPARTMENT OF ENVIRONMENTAL MANAGEMENT

Personal Protective Equipment Written Program

**In accordance with 29 CFR 1910, Subpart I Personal Protective Equipment
Standard**

1.0 INTRODUCTION

The proper use of Personal Protective Equipment (PPE) is an integral part of a comprehensive Safety and Health Management Program. Personal protective equipment is available for a variety of uses including eye and face protection, foot protection, hearing protection, respiratory protection, head protection, and hand protection. In this section we will discuss the equipment available, proper selection and use of equipment and training requirements when applicable.

2.0 PURPOSE

The purpose of this program is to protect employees of New Hanover County Department of Environmental Management and to comply with 29 CFR 1910.132, .133,.135 – 138.

Individual jobs in this facility have been identified and personal protective equipment (PPE) hazard assessment has been performed as required by OSHA to determine needed PPE. This hazard assessment and other PPE information can be found in the Appendix A, and Appendix B of this program.

After reviewing the OSHA 200 LOG and the PPE Hazard Assessment the following PPE is needed for the employees of DEM:

3.0 EYE AND FACE PROTECTION (29 CFR 1910.133)

The purpose of establishing eye and face protection policies is to prevent eye injuries resulting from contact with chemical or physical agents.

General Safety Guidelines

Many hazards, which may pose immediate and potentially irreversible eye damage, exist within a work environment. Whenever the use of safety glasses is required; such use will be strictly enforced.

1. Departmental eye protection consists of safety glasses with side shields, goggles, and face shields.
2. Eye protection will be worn in the following areas:
 - ◆ All DEM facilities, except for the WASTEC control room, inside powered industrial truck cabs, DEM restrooms, and offices.
3. Contact lenses shall be used in office areas only.

4. A pair of goggles with a faceshield or a combination goggle-faceshield shall be worn when doing the following jobs:
 - ◆ Handling chemicals
 - ◆ Servicing storage batteries
 - ◆ Grinding
 - ◆ Chipping
 - ◆ Drilling
 - ◆ Chiseling
 - ◆ Soldering
 - ◆ Breaking concrete
5. Welders shall wear the following eye protection:
 - ◆ A minimum of a #10 eye shade when arc welding.
 - ◆ A minimum of a #5 eye shade when cutting.
6. Any employee whose eyes may be exposed to electric arc while assisting a welder shall wear eye protection equivalent to that of the welder.
7. All contractors or visitors who enter the areas outlined above for any purpose will be required to wear same eye and face protection as employees.
8. All contractors or visitors will be required to wear appropriate eye and face protection. When performing tasks outlined above, the same protection is required.
9. Selection of eye protection must suit the job at hand. When in doubt, contact your immediate supervisor/manager.
10. Employees whose vision requires the use of prescription lenses must wear protective devices over regular prescription eyewear or purchase prescription safety glasses (see Appendix D).
11. The wearing of safety glasses is not normally required in offices, control rooms, locker rooms, and break areas. However, activities such as maintenance work in these areas may require employees in these areas to wear suitable eye protection.
12. Eye and face protection shall be inspected regularly for integrity, and defective or damaged eye and face protection shall be immediately removed from service

4.0 HEAD PROTECTION (29 CFR 1910.135)

The purpose of establishing head protection policies is to prevent injury to the head which may result from falling objects, electric shock and burn.

General Safety Guidelines

1. Head Protection shall be worn:
 - ◆ Inside WASTEC
 - ◆ Outside WASTEC when there are overhead hazards present (e.g. overhead crane, forklifts, and construction).
2. Department issued hard hats are not to be drilled or cut. This may result in weakening the mechanical strength and dielectric strength of a hard hat.
3. Hard hats shall be worn with the brim positioned to the front. The wearing of baseball caps under the hard hat invalidates the integrity of the suspension and shall not be worn. (Note: Maintenance personnel who use a grinding or cutting/welding shield may wear their hat backwards if the suspension is adjusted accordingly).
4. It is the individual's responsibility to inspect the hat and the suspension prior to each use. If either is found defective, it shall be replaced without delay.
5. Only approved Department decals and the employee's name will be permitted on a hard hat. When an employee's name is on the hard hat, it shall be produced on a non-conducting material. No other method is allowed or acceptable.
6. The department shall provide ANSI Z89.1 approved Type I, Class N and G hardhats to all employees who are expected to wear head protection.

5.0 BODY PROTECTION

The purpose of establishing body protection policies is to prevent injury to the body which may result from being exposed temperature extremes, wet conditions, etc.

General Safety Guidelines

- 1) Thermal wear shall be provided and its use required whenever working in areas where there is exposure to the
- 2) Rain suits shall be provided and their use required whenever working in areas where cleaning is being performed with chemicals, water or high-pressure water.

6.0 HEARING PROTECTION (29 CFR 1910.95)

The purpose of establishing hearing protection policies is to reduce or eliminate the damage to hearing that is often a direct result of noise level and duration.

General Safety Guidelines

- 1) Employees required to take part in the DEM Hearing Conservation Program will be provided hearing protection whenever they are exposed at 85dBA or higher.
- 2) The following types of hearing protection are available at DEM:
 - Ear Plugs
 - Ear Muffs
 - Canal Caps
- 3) Employees are required to wear hearing protection in the following areas:

WASTEC

1. Turbine Generator Room
2. Surface Condenser Area
3. Ash Pusher Area
4. All Air Compressors
5. Electrostatic Precipitators (1 and 2)
6. During Personal Blow Down
7. During Depressurization of Boilers 1,2 and 3* (All areas)
8. When working in the vicinity of Boiler #3 Fans
9. When blowing soot (This only applies to personnel working in the vicinity of the soot blower)
10. When operating various tools, such as a band saw or jackhammer
11. ID Fans 1, 2, & 3

LANDFILL

1. Air Compressor Building
2. Blowers at Wastewater Treatment Plant*
3. When operating the Gregory Poole Bulldozer
4. When operating the Tractor

***SPECIAL REQUIREMENTS OF HEARING PROTECTION DEVICES**

Double hearing protection shall be worn in the following areas (i.e. earplugs covered by ear muffs)

1. Responding to a lifted safety
2. Working around the blowers at the Wastewater Treatment Plant.

7.0 FOOT PROTECTION (29 CFR 1910.136)

The purpose of establishing foot protection policies is to prevent foot injuries resulting from contact with chemical or physical agents.

General Safety Guidelines

- 1) To avoid foot injuries resulting from the impact of falling tools or equipment, employees are required to wear steel-toed shoes/boots while working in the following areas:
 - WASTEC
 - Recycling Areas
 - NHC Landfill
- 2) Where Potential exposure to chemical hazards and/or temperature extremes exist, employees will be provided with and required to wear suitable boots or overshoes.
- 3) Under no circumstances are cloth or tennis shoes, sandals, fancy lightweight or high-heeled shoes to be permitted in the plant areas as leather/vinyl shoes must be worn in this area.
- 4) To prevent slips and/or falls shoes with slip resistant soles, such as neoprene soles, must be worn.
- 5) The following shall wear steel-toed boots/shoes with a puncture resistant sole:
 - WASTEC Tipping Bay Attendant
 - WASTEC Ash Haulers
 - WASTEC Relief Shift Crane Operator
 - Recycling Operator I (Baler Operations)
 - All NHC Landfill employees that perform work on the Landfill face.

8.0 HAND PROTECTION (29 CFR 1910.138)

The purpose of establishing hand protection policies is to prevent hand injuries Resulting from contact with chemical, physical agents or temperature extreme.

General Safety Guidelines

- 1) To avoid hand injuries from chemicals, cold, heat, abrasive surfaces or sharp objects, employees are required to wear appropriate hand protection while performing the following duties:
 - Welding gloves while performing cutting and welding operations.
 - Rubber gloves while changing and servicing batteries.
 - Chemical resistant gloves for handling chemicals (make sure the glove used is impervious to the chemical).
 - Electrical (10, 00 volts) gloves must be worn when working directly with electrical systems that can not be lock out.

9.0 RESPIRATORY PROTECTION (29 CFR 1910.134)

Please refer to the New Hanover County Department of Environmental Management Respiratory Protection Program.

10.0 TRAINING

- 1) Training shall be provided to employees whose work requires the use of personal protective equipment.
- 2) Upon completion of training, employees shall demonstrate their knowledge of the proper use and care of hand and/or foot protection and shall be certified accordingly utilizing the Personal Protective Equipment Certification Form, (Appendix B).
- 3) Employees shall be retrained whenever:
 - a) Changes in workplace conditions occur; or
 - b) Changes in use of personal protective equipment occurs; or
 - c) Employees demonstrate a lack of knowledge in the use and care of PPE.

PPE Hazard Assessment Certification Form

Name of work place: _____

Assessment conducted by: _____

Work place address: _____

Date of assessment: _____

Work area(s): _____

Job/Task(s): _____

(Use a separate sheet for each job/task or work area)

EYES		
<p><u>Work activities, such as:</u></p> <div style="display: flex; flex-wrap: wrap;"> <div style="width: 50%;"> <input type="checkbox"/> abrasive blasting <input type="checkbox"/> chopping <input type="checkbox"/> cutting <input type="checkbox"/> drilling <input type="checkbox"/> welding <input type="checkbox"/> soldering <input type="checkbox"/> torch brazing <input type="checkbox"/> working outdoors <input type="checkbox"/> computer work <input type="checkbox"/> punch press operations <input type="checkbox"/> other: </div> <div style="width: 50%;"> <input type="checkbox"/> sanding <input type="checkbox"/> sawing <input type="checkbox"/> grinding <input type="checkbox"/> hammering <input type="checkbox"/> chipping </div> </div>	<p><u>Work-related exposure to:</u></p> <input type="checkbox"/> airborne dust <input type="checkbox"/> dirt <input type="checkbox"/> UV <input type="checkbox"/> flying particles/objects <input type="checkbox"/> blood splashes <input type="checkbox"/> hazardous liquid chemicals mists <input type="checkbox"/> chemical splashes <input type="checkbox"/> molten metal splashes <input type="checkbox"/> glare/high intensity lights <input type="checkbox"/> laser operations <input type="checkbox"/> intense light <input type="checkbox"/> hot sparks <input type="checkbox"/> other:	<p><u>Can hazard be eliminated without the use of PPE?</u> Yes <input type="checkbox"/> No <input type="checkbox"/></p> <p><u>If no, use:</u></p> <input type="checkbox"/> Safety glasses <input type="checkbox"/> Safety goggles <input type="checkbox"/> Dust-tight goggles <input type="checkbox"/> Impact goggles <input type="checkbox"/> Welding helmet/shield <input type="checkbox"/> Chemical goggles <input type="checkbox"/> Chemical splash goggles <input type="checkbox"/> Laser goggles <input type="checkbox"/> Shading/Filter (# _____) <input type="checkbox"/> Welding shield <input type="checkbox"/> Other:
FACE		
<p><u>Work activities, such as:</u></p> <div style="display: flex; flex-wrap: wrap;"> <div style="width: 50%;"> <input type="checkbox"/> cleaning <input type="checkbox"/> cooking <input type="checkbox"/> siphoning <input type="checkbox"/> painting <input type="checkbox"/> dip tank operations <input type="checkbox"/> pouring <input type="checkbox"/> other: </div> <div style="width: 50%;"> <input type="checkbox"/> foundry work <input type="checkbox"/> welding <input type="checkbox"/> mixing <input type="checkbox"/> pouring molten metal <input type="checkbox"/> working outdoors </div> </div>	<p><u>Work-related exposure to:</u></p> <input type="checkbox"/> hazardous liquid chemicals <input type="checkbox"/> extreme heat <input type="checkbox"/> extreme cold <input type="checkbox"/> potential irritants: <input type="checkbox"/> other:	<p><u>Can hazard be eliminated without the use of PPE?</u> Yes <input type="checkbox"/> No <input type="checkbox"/></p> <p><u>If no, use:</u></p> <input type="checkbox"/> Face shield <input type="checkbox"/> Shading/Filter (# _____) <input type="checkbox"/> Welding shield <input type="checkbox"/> Other:
HEAD		
<p><u>Work activities, such as:</u></p> <input type="checkbox"/> building maintenance <input type="checkbox"/> confined space operations <input type="checkbox"/> construction <input type="checkbox"/> electrical wiring <input type="checkbox"/> walking/working under catwalks	<p><u>Work-related exposure to:</u></p> <input type="checkbox"/> beams <input type="checkbox"/> pipes <input type="checkbox"/> exposed electrical wiring or components <input type="checkbox"/> falling objects	<p><u>Can hazard be eliminated without the use of PPE?</u> Yes <input type="checkbox"/> No <input type="checkbox"/></p> <p><u>If no, use:</u></p> <input type="checkbox"/> Protective Helmet <input type="checkbox"/> Type A (low voltage) <input type="checkbox"/> Type B (high voltage)

LUNGS/RESPIRATORYWork activities such as:

- | | |
|---|----------------------------------|
| <input type="checkbox"/> cleaning | <input type="checkbox"/> pouring |
| <input type="checkbox"/> mixing | <input type="checkbox"/> sawing |
| <input type="checkbox"/> painting | |
| <input type="checkbox"/> fiberglass installation | |
| <input type="checkbox"/> compressed air or gas operations | |
| <input type="checkbox"/> confined space work | |
| <input type="checkbox"/> floor installation | |
| <input type="checkbox"/> ceiling repair | |
| <input type="checkbox"/> working outdoors | |
| <input type="checkbox"/> other: | |

Work-related exposure to:

- dust or particulate
- toxic gas/vapor
- chemical irritants (acids)
- welding fume
- asbestos
- pesticides
- organic vapors
- oxygen deficient environment
- paint spray
- extreme heat/cold
- other:

Can hazard be eliminated without the use of PPE?Yes No If no, use:

- Dust mask
- Disposable particulate respirator
- Replaceable filter particulate w/cartridge
- PAPR (Air recycle)
- PPSA (Air supply)

With/Type:

- face shield
- acid/gas crtgd
- organic crtgd
- pesticide crtgd
- spray paint crtgd
- half faced
- full faced
- hooded

EARS/HEARINGWork activities such as:

- | | |
|---|------------------------------------|
| <input type="checkbox"/> generator | <input type="checkbox"/> grinding |
| <input type="checkbox"/> ventilation fans | <input type="checkbox"/> machining |
| <input type="checkbox"/> motors | <input type="checkbox"/> routers |
| <input type="checkbox"/> sanding | <input type="checkbox"/> sawing |
| <input type="checkbox"/> pneumatic equipment | <input type="checkbox"/> sparks |
| <input type="checkbox"/> punch or brake presses | |
| <input type="checkbox"/> use of conveyors | |
| <input type="checkbox"/> other: | |

Work-related exposure to:

- loud noises
- loud work environment
- noisy machines/tools
- punch or brake presses
- other:

Can hazard be eliminated without the use of PPE?Yes No If no, use:

- ear muffs
- ear plugs
- leather welding hood

		<input type="checkbox"/> other:			
BODY/SKIN					
<u>Work activities such as:</u> <input type="checkbox"/> baking or frying <input type="checkbox"/> battery charging <input type="checkbox"/> dip tank operations <input type="checkbox"/> fiberglass installation <input type="checkbox"/> sawing <input type="checkbox"/> other:	<u>Work-related exposure to:</u> <input type="checkbox"/> chemical splashes <input type="checkbox"/> extreme heat <input type="checkbox"/> extreme cold <input type="checkbox"/> sharp or rough edges <input type="checkbox"/> irritating chemicals <input type="checkbox"/> other:	<u>Can hazard be eliminated without the use of PPE?</u> Yes <input type="checkbox"/> No <input type="checkbox"/> If no, use: <table style="width: 100%; border: none;"> <tr> <td style="width: 70%; border: none;"> <input type="checkbox"/> Vest, Jacket <input type="checkbox"/> Coveralls, Body suit <input type="checkbox"/> Raingear <input type="checkbox"/> Apron <input type="checkbox"/> Welding leathers <input type="checkbox"/> Abrasion/cut resistance <input type="checkbox"/> Other: </td> <td style="width: 30%; border: none; vertical-align: top;"> <u>With:</u> <input type="checkbox"/> Long sleeves </td> </tr> </table>		<input type="checkbox"/> Vest, Jacket <input type="checkbox"/> Coveralls, Body suit <input type="checkbox"/> Raingear <input type="checkbox"/> Apron <input type="checkbox"/> Welding leathers <input type="checkbox"/> Abrasion/cut resistance <input type="checkbox"/> Other:	<u>With:</u> <input type="checkbox"/> Long sleeves
<input type="checkbox"/> Vest, Jacket <input type="checkbox"/> Coveralls, Body suit <input type="checkbox"/> Raingear <input type="checkbox"/> Apron <input type="checkbox"/> Welding leathers <input type="checkbox"/> Abrasion/cut resistance <input type="checkbox"/> Other:	<u>With:</u> <input type="checkbox"/> Long sleeves				
BODY/WHOLE					
<u>Work activities such as:</u> <input type="checkbox"/> building maintenance <input type="checkbox"/> construction <input type="checkbox"/> logging <input type="checkbox"/> computer work <input type="checkbox"/> working outdoors <input type="checkbox"/> utility work <input type="checkbox"/> other:	<u>Work-related exposure to:</u> <input type="checkbox"/> working from heights of 10 feet or more <input type="checkbox"/> impact from flying objects <input type="checkbox"/> impact from moving vehicles <input type="checkbox"/> sharps injury <input type="checkbox"/> blood <input type="checkbox"/> electrical/static discharge <input type="checkbox"/> hot metal <input type="checkbox"/> musculoskeletal disorders <input type="checkbox"/> sparks <input type="checkbox"/> chemicals <input type="checkbox"/> extreme heat/cold <input type="checkbox"/> elevated walking/working surface <input type="checkbox"/> working near water <input type="checkbox"/> injury from slip/trip/fall <input type="checkbox"/> other:	<u>Can hazard be eliminated without the use of PPE?</u> Yes <input type="checkbox"/> No <input type="checkbox"/> If no, use: <table style="width: 100%; border: none;"> <tr> <td style="width: 70%; border: none;"> <input type="checkbox"/> Fall Arrest/Restraint <input type="checkbox"/> Traffic vest <input type="checkbox"/> Static coats/overalls <input type="checkbox"/> Flame resistant jacket/pants <input type="checkbox"/> Insulated jacket <input type="checkbox"/> Cut resistant sleeves/wristlets <input type="checkbox"/> hoists/lifts <input type="checkbox"/> ergonomic equipment: _____ <input type="checkbox"/> Other: </td> <td style="width: 30%; border: none; vertical-align: top;"> <u>With:</u> <input type="checkbox"/> Hood <input type="checkbox"/> Full sleeves </td> </tr> </table>		<input type="checkbox"/> Fall Arrest/Restraint <input type="checkbox"/> Traffic vest <input type="checkbox"/> Static coats/overalls <input type="checkbox"/> Flame resistant jacket/pants <input type="checkbox"/> Insulated jacket <input type="checkbox"/> Cut resistant sleeves/wristlets <input type="checkbox"/> hoists/lifts <input type="checkbox"/> ergonomic equipment: _____ <input type="checkbox"/> Other:	<u>With:</u> <input type="checkbox"/> Hood <input type="checkbox"/> Full sleeves
<input type="checkbox"/> Fall Arrest/Restraint <input type="checkbox"/> Traffic vest <input type="checkbox"/> Static coats/overalls <input type="checkbox"/> Flame resistant jacket/pants <input type="checkbox"/> Insulated jacket <input type="checkbox"/> Cut resistant sleeves/wristlets <input type="checkbox"/> hoists/lifts <input type="checkbox"/> ergonomic equipment: _____ <input type="checkbox"/> Other:	<u>With:</u> <input type="checkbox"/> Hood <input type="checkbox"/> Full sleeves				

<input type="checkbox"/> walking/working on catwalks <input type="checkbox"/> walking/working under conveyor belts <input type="checkbox"/> working with/around conveyor belts <input type="checkbox"/> walking/working under crane loads <input type="checkbox"/> utility work <input type="checkbox"/> other:	<input type="checkbox"/> fixed object <input type="checkbox"/> machine parts <input type="checkbox"/> other:	<input type="checkbox"/> Type C <input type="checkbox"/> Bump cap (not ANSI-approved) <input type="checkbox"/> Hair net or soft cap <input type="checkbox"/> Other:
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HANDS/ARMS

<p><u>Work activities, such as:</u></p> <input type="checkbox"/> baking <input type="checkbox"/> cooking <input type="checkbox"/> grinding <input type="checkbox"/> welding <input type="checkbox"/> working with glass <input type="checkbox"/> using computers <input type="checkbox"/> using knives <input type="checkbox"/> dental and health care services <input type="checkbox"/> garbage disposal <input type="checkbox"/> computer work <input type="checkbox"/> other:	<p><u>Work-related exposure to:</u></p> <input type="checkbox"/> blood <input type="checkbox"/> irritating chemicals <input type="checkbox"/> tools or materials that could scrape, bruise, or cut <input type="checkbox"/> extreme heat <input type="checkbox"/> extreme cold <input type="checkbox"/> animal bites <input type="checkbox"/> electric shock <input type="checkbox"/> vibration <input type="checkbox"/> musculoskeletal disorders <input type="checkbox"/> sharps injury <input type="checkbox"/> other:	<p><u>Can hazard be eliminated without the use of PPE?</u> Yes <input type="checkbox"/> No <input type="checkbox"/></p> <p><u>If no, use:</u></p> <input type="checkbox"/> Gloves <input type="checkbox"/> Chemical resistance <input type="checkbox"/> Liquid/leak resistance <input type="checkbox"/> Temperature resistance <input type="checkbox"/> Abrasion/cut resistance <input type="checkbox"/> Slip resistance <input type="checkbox"/> Latex or nitrile <input type="checkbox"/> Anti-vibration <input type="checkbox"/> Protective sleeves <input type="checkbox"/> Ergonomic equipment _____ <input type="checkbox"/> Other:
--	---	--

FEET/LEGS

<p><u>Work activities, such as:</u></p> <input type="checkbox"/> building maintenance <input type="checkbox"/> construction <input type="checkbox"/> demolition <input type="checkbox"/> food processing <input type="checkbox"/> foundry work <input type="checkbox"/> working outdoors <input type="checkbox"/> logging <input type="checkbox"/> plumbing <input type="checkbox"/> trenching <input type="checkbox"/> use of highly flammable materials <input type="checkbox"/> welding <input type="checkbox"/> other:	<p><u>Work-related exposure to:</u></p> <input type="checkbox"/> explosive atmospheres <input type="checkbox"/> explosives <input type="checkbox"/> exposed electrical wiring or components <input type="checkbox"/> heavy equipment <input type="checkbox"/> slippery surfaces <input type="checkbox"/> impact from objects <input type="checkbox"/> pinch points <input type="checkbox"/> crushing <input type="checkbox"/> slippery/wet surface <input type="checkbox"/> sharps injury <input type="checkbox"/> blood <input type="checkbox"/> chemical splash <input type="checkbox"/> chemical penetration <input type="checkbox"/> extreme heat/cold <input type="checkbox"/> fall	<p><u>Can hazard be eliminated without the use of PPE?</u> Yes <input type="checkbox"/> No <input type="checkbox"/></p> <p><u>If no, use:</u></p> <input type="checkbox"/> Safety shoes or boots <input type="checkbox"/> Toe protection <input type="checkbox"/> Electrical protection <input type="checkbox"/> Puncture resistance <input type="checkbox"/> Anti-slip soles <input type="checkbox"/> Leggings or chaps <input type="checkbox"/> Foot-Leg guards <input type="checkbox"/> Other:	<input type="checkbox"/> Metatarsal protection <input type="checkbox"/> Heat/cold protection <input type="checkbox"/> Chemical resistance
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APPENDIX E

PRESCRIPTION SAFETY GLASSES REIMBURSEMENT POLICY

Prescription Safety Glasses Reimbursement Policy

I. Purpose:

The purpose of this policy is to set forth requirements to provide an allowance for regularly budgeted employees of New Hanover County to purchase ANSI Z.87.1-1989 approved safety glasses with non-detachable side shields for their use while employed in occupations or work activities where safety glasses are required under NCOSHA regulation 1910.133.

II. Amount of Allowance:

New Hanover County shall provide a maximum payment of \$100.00 annually to employees who qualify for the benefit.

III. Program Procedures:

- 1) Those employees meeting the requirements of the program and who elect to purchase prescription safety glasses must have their supervisor sign a Prescription Safety Glasses Purchase Form. This form shall be completed by the Vendor at time of purchase.
- 2) Employees may select for purchase, ANSI Z87.1-1989 approved prescription safety glasses with non-detachable side shields from vendors of their choosing. Employees shall present a completed Purchase Form and a copy of the receipt to their supervisor for approval and reimbursement.
- 3) Each department with employees requesting prescription safety glasses reimbursement shall submit the completed Purchase Form and a copy of the receipt to the Finance Department for reimbursement.

IV. Termination of Employment:

In the event an employee is terminated or resigns within two(2) months of receiving reimbursement by the County for prescription safety glasses, the following withholding policy shall apply to the employee's final pay:

- 1) Within one (1) month of reimbursement: total reimbursed amount withheld from final pay.
- 2) Within two (2) months of reimbursement: 50 % of reimbursed amount withheld

New Hanover County
Prescription Safety Glasses
Agreement Form

Per my signature below, I have read, understand and agree to abide by the terms listed below concerning the purchase and reimbursement of prescription safety glasses for my use during employment with New Hanover County:

- 1) I agree that my occupation or work activities with New Hanover County requires that I wear eye protection to perform some or all of my duties.
- 2) I agree that I will purchase ANSI Z87.1-1989 approved prescription safety glasses with non-detachable side shields.
- 3) I agree that should my employment with New Hanover County be terminated or I resign within two (2) months of receiving reimbursement by the County for prescription safety glasses, the following withholding policy shall apply to my final pay:
 - a) Within one month of reimbursement: the total reimbursed amount shall be withheld from my final pay.
 - b) Within two months of reimbursement: 50% of the total reimbursed amount shall be withheld from my final pay.
 - c) After two months of reimbursement: no amount shall be withheld from my final pay.

Print name

Employee's Signature

Date

Prescription Safety Glasses

Purchase Form

_____ is an employee of New Hanover County
and his/her occupation or work activities requires the use of eye protection.

Supervisor

Date

The employee named above has purchased from this establishment a pair of
ANSI Z87.1-1989 approved prescription safety glasses with non-detachable
side shields.

Name of Establishment

Vendor Representative

Date

from final pay.

- 3) After two (2) months: no amount withheld from final pay.

V. Responsibilities:

- 1) Employees shall be responsible for completion and submission of the Purchase Form and ensuring prescription safety glasses purchased for reimbursement are ANSI Z87.1-1989 approved.
- 2) Supervisors shall ensure that employees requesting reimbursement for prescription safety glasses are employed in occupations or work activities requiring the use of protective eye wear. Supervisors shall forward the Purchase Form and a copy of the receipt through proper channels for reimbursement to the employee.

APPROVED BY:

NAME	TITLE	DATE

REVISION HISTORY:

REVISION	DATE	SECTIONS	REASON

ANNUAL REVIEW:

NAME	TITLE	DATE

DISTRIBUTION:

DEPARTMENT/DIVISION	LOCATION

NEW HANOVER COUNTY
DEPARTMENT OF ENVIRONMENTAL MANAGEMENT

Powered Industrial Trucks Written Program

In accordance with 29 CFR 1910.178 Powered Industrial Trucks Standard

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INTRODUCTION

The purpose of the powered industrial truck policy is to ensure the protection of all employees from hazards associated with the normal working procedures that involve the use of lift truck.

Each year more than 100 people are killed and over 95,000 injured in accidents involving fork trucks. It is estimated that approximately 25% of these accidents are partially attributed to inadequate training.

Through this written policy, extensive operator training , and yearly program evaluation the Department of Environmental Management will comply with 29 CFR 1910.178.

1.0 GENERAL REQUIREMENTS

Modifications and additions, which affect capacity and safe operation, must not be performed without the manufacturer prior written approval. If changes are made, capacity, operation, and maintenance instruction plates, tags, or decals must be changed accordingly. All nameplates and markings must be in place and must be maintained in a legible condition.

2.0 DESIGNATIONS

For the purpose of compliance with 29 CFR 1910.178, there are eleven different designations of industrial trucks or tractors as follows: D, DS, DY, E, ES, EE,, EX, G, GS, LP, and LPS.

3.0 OPERATOR TRAINING

New Hanover County DEM requires strict adherence to the training requirements of CFR 1910.178 (1) operator training which became effective March 1, 1999. Only trained and authorized operators are permitted to operate a powered industrial truck. Training in the safe operation of powered industrial trucks is provided for operators upon assignment and every three (3) years thereafter, unless;

- there is an unsafe operation;
- an accident or near-miss;
- an operator who was shown in evaluation to not be capable of performing assigned duties;
- workplace conditions change;
- a different type of equipment introduced.

The required elements of this training are listed as follows:

This training consist of a combination of classroom instruction (Lecture, discussion, videotapes, and/or conference) and practical training (demonstrations and practical exercises by the trainee). All training and evaluation shall be conducted by a designated person who has the required knowledge, training and experience to train powered industrial truck operators and judge their competency.

Training program content: Powered industrial truck operator trainees shall be trained in the following topics unless New Hanover County WASTEC can demonstrate that some of the topics are not needed for safe operation.

- 1) All operating instructions, warnings and precautions for the types of trucks the operator will be authorized to operate:
- 2) Similarities to and differences from the automobile;
- 3) Controls and instrumentation: location, what they do and how they work;
- 4) Plant operations and hazards
- 5) Equipment maintenance:
- 6) Steering and maneuvering;
- 7) Visibility (including restrictions due to loading);
- 8) Fork and attachment adaptation, operating and limitations of their utilization;
- 9) Vehicle capacity; Vehicle stability;
- 10) Vehicle inspection and maintenance;
- 11) Refueling or charging, recharging batteries;
- 12) Operating limitations; and
- 13) Any other operating instruction, warning or precaution listed in the operator's manual for the type vehicle which the employee is being trained to operate.
- 14) Surface conditions where the vehicle will be operated;
- 15) Composition of probable loads and load stability;
- 16) Load manipulation, stacking, unstacking;

- 17) Pedestrian traffic;
- 18) Narrow aisles and other restricted places of operation;
- 19) Operating the truck on ramps and other sloped surfaces that could affect the stability of the vehicle;
- 20) Other unique or potentially hazardous environmental conditions that exist or may exist in the workplace.
- 21) The special hazards posed by the use of motorized hand trucks in concert with rider model trucks in our operations.

Evaluation and Refresher or Remedial Training

Sufficient evaluation and remedial training shall be conducted so that the employee retains and uses the knowledge, skills and ability needed to operate the powered industrial truck safely. An evaluation of the performance of each powered industrial truck operator shall be conducted at least annually by a designated person. Refresher or remedial training shall be provided when there is reason to believe that there has been unsafe operation, when an accident or a near-miss occurs or when an evaluation indicates that the operator is not capable of performing the assigned duties.

Certification

New Hanover County DEM shall certify that each operator has received the training, has been evaluated as required, and has demonstrated competency in the performance of the operator's duties. The certification shall include the name of the trainee, the date of training, and the signature of the person performing the training and evaluation. The Safety Officer shall retain the current training materials and course outline or the name and address of the person who conducted the training.

4.0 USE OF SAFETY EQUIPMENT

Powered Industrial Trucks utilize various devices to increase operator safety. When provided on company owned equipment these devices must be used by the operator at all times the lift is in use. Removal or modification of these devices is prohibited without the express written consent of the equipment manufacturer. Some of these devices and their purpose and use procedures are as follows:

Seat Belts – when company owned forklifts have set belts as standard equipment the operator must use them at all times the machine is in use. They may not be removed or rendered unusable.

Back up Alarms – When provided on company owned forklifts these devices when using audio, visual or combination alarms, must function when the forklift is in reverse gear. Employees may not remove, tamper or disable such devices. When malfunctioning equipment is noted in the pre operational checklist or in the course or normal use, employees are to report these malfunctions to their supervisor immediately.

Auxiliary Lighting – When operating forklifts in low light conditions (Where general lighting is less than 2 lumens per square foot, auxiliary directional lighting shall be provided on the truck), auxiliary lighting must be in working condition and provide adequate illumination to afford the operator a clear view of the area.

Horn – All trucks must be equipped with a functioning horn capable of alerting individuals of normal hearing of the approach of the truck. All trucks with malfunctioning horns must be taken out of service and tagged as such. The driver shall be required to slow down and sound the horn at cross aisles and other locations where vision is obstructed.

Safety Guards – High Lift trucks shall be fitted with an overhead guard manufactured in accordance with paragraph (a) (2) of this section, unless operating conditions do not permit.

Signal Lights – When provided these lights must function and be used by operators to announce turns into aisles, trailers, doorways and at any other times such a signal is necessary. Employees must report malfunctions of such lights immediately.

5.0 INSPECTIONS

All powered industrial trucks shall meet the design and construction requirements for powered industrial trucks established in the American National Standards for Powered Industrial Trucks, Part II ANSI B56.1 169. Forklifts shall bear an identifying mark indication or approval by the testing laboratory.

Industrial trucks shall be examined before each shift, and shall not be placed in service if the examination shows any condition adversely affecting the safety of the vehicle. A pre-use inspection checklist has been developed to check each truck for safety hazards before placing that truck into service, (Appendix A). Defects when found shall be immediately noted on the pre-use inspection checklist, reported and corrected. Copies of the pre-use inspection checklist shall be kept by the Operations Mechanic II or Relief Shift Supervisor to ensure that follow up on repair requests are completed.

6.0 TRUCK SAFETY

1. Before boarding any semi-truck trailer, inspect the truck to be sure that the brakes are set and wheel chocks have been placed under the rear wheels to prevent the truck from rolling while being boarded. When the trailer is not coupled to a tractor, use fixed jacks to support the semi-truck trailer and prevent upending during the loading or unloading. The flooring of trucks and trailers should be checked for gaps and weakness before entry.
2. Do not fuel tanks while the engine is running. Avoid spillage. Always replace the fuel tank cap before restarting engine. In the event of an oil or fuel spill to the ground or to pavement, notify the Safety Officer.
3. Do not operate a truck with a leak in the fuel system until the leak has been corrected.

7.0 TRUCK OPERATIONS

1. Do not drive trucks up to anyone standing in front of a bench or other fixed object.
2. Do not allow the elevated portion of the truck to pass over anyone. Do not allow anyone to stand or pass under the elevated portion of any truck, whether loaded or empty.
3. Do not permit unauthorized personnel to ride on powered industrial trucks. A safe place to ride must be provided where riding of trucks is authorized.
4. Do not place arms or legs between the uprights of the mast (if applicable) or outside the running lines of the truck.
5. When a powered industrial truck is to be left unattended, lower the load, place controls in neutral, shut off the power, and set the brakes. If on an incline, block the wheels. A powered industrial truck is considered unattended when the operator is 25ft or more away from the vehicle which remains in view, or whenever the operator leaves the vehicle and it is not in view.
6. Use only dockboards (bridge plates) that meet requirements in 29 CFR 1910.30(a).
7. Maintain a safe distance from the edge of ramps or platforms while on any elevated dock, or platform.
8. Be sure there is sufficient headroom under overhead installations, lights, pipes, sprinkler system, etc.

9. While an overhead guard has been installed as protection against falling objects, it should be noted that it is intended to offer protection from the impact of small packages, boxes, bagged material, etc., representative of the job application. It is not intended to withstand the impact of a falling capacity load.
10. Use a load backrest extension whenever necessary to minimize the possibility of the load or part of it from falling rearward.
11. Use only approved industrial trucks in hazardous locations.
12. Whenever a trucks equipped with vertical only, or vertical and horizontal controls elevatable with the lifting carriage or forks for lifting personnel, the following additional precautions are to be taken for the protection of personnel being elevated.
 - √ Use a safety platform firmly secured to the lifting carriage and/or forks.
 - √ Power cut-off means must be available whereby personnel on the platform can shut off power to the truck.
 - √ Protection from falling objects as indicated necessary by the operating conditions must be used.
13. Keep aisles, access to stairways, and fire equipment clear.

Traveling

1. Observe all traffic regulations, including authorized plant speed limits. Maintain a safe distance, approximately three truck lengths, from the truck ahead. Keep the truck under control at all times.
2. Yield right of way to ambulances, fire trucks, or other vehicles in emergency situations.
3. Do not pass other trucks traveling in the same direction at intersections, blind spots, or other dangerous locations.
4. Slow down and sound the horn at cross aisles and other locations where vision is obstructed. If the load being carried obstructs forward view, travel with the load trailing.
5. Cross railroad tracks diagonally wherever possible.
6. Look in the direction of, and keep a clear view of the path of travel.
7. Ascend or descend grades slowly.

- √ When ascending or descending grades in excess of 10 percent, drive loaded trucks with the load upgrade.
 - √ On all grades, tilt the load and load engaging means back if applicable.
 - √ Only raise the load as far as necessary to clear the road surface.
8. Operate the truck at a speed that will permit it to be brought to a stop in a safe manner at all times under all conditions.
 9. Stunt driving and horseplay are not permitted and are grounds for dismissal.
 10. Slow down for wet and slippery floors.
 11. Secure dockboard or bridge plates properly before they are driven over. Drive carefully and approach elevated platforms or elevators slowly, and then enter squarely after the elevator car is properly leveled. Once on the platform/elevator, neutralize controls, shut off power, and set the brake.
 12. When using a motorized hand truck, enter an elevated platform/elevator or other confined areas with load end trailing.
 13. Avoid running over loose objects on the roadway surface.
 14. While negotiating turns, reduce speed to a safe level by means of turning the hand steering wheel in a smooth, sweeping motion. Except when maneuvering at a very low speed, turn the hand steering wheel at a moderate, even rate.

Loading

1. Handle only stable or safely arranged loads. Use caution when handling off center loads which cannot be centered.
2. Handle only loads within the rated capacity of the truck.
3. Adjust long or high (including multiple-tiered) loads which may affect capacity of the truck.
4. When not handling a load, operate trucks equipped with attachments as if partially loaded.
5. Place a load engaging means under the load as far as possible; carefully tilt the mast backward to stabilize the load.
6. Use extreme care when tilting the load forward or backward, particularly when high tiering. Do not tilt forward with load engaging means elevated except to

pick up a load. Do not tilt an elevated load forward except when the load is in a deposit position over a rack or stack. When stacking or tiering, use only enough backward tilt to stabilize the load.

8.0 MAINTENANCE OF INDUSTRIAL TRUCKS

1. Immediately remove from service any power-operated industrial truck not in safe operating condition. Only authorized persons may make repairs.
2. Conduct repairs to the fuel and ignition systems of industrial trucks which involve fire hazards only in locations designated for such repairs.
3. Disconnect the battery on trucks in need of repairs to the electrical system prior to such repairs.
4. Do not alter industrial trucks so that the relative positions of the various parts are different from what they were when originally received from the manufacturer.
5. Do not add extra parts not provided by the manufacturer. Do not alter the truck either by addition or by the elimination of any parts. Do not counterweight fork trucks unless approved by the truck manufacturer.
6. Examine all industrial trucks before placing truck in service. Do not place the truck in service if the examination shows any condition adversely affecting the safety of the vehicle.
7. A Pre-Inspection checklist shall be completed at each shift. Report and correct any defects immediately.
8. When the temperature of any part of any truck is found to be in excess of its normal operating temperature, thus creating a hazardous condition, remove the vehicle from service and do not return it to service until the cause for such overheating has been eliminated.
9. Keep industrial trucks in clean condition, free of lint, excess oil, and grease. Use noncombustible detergents for cleaning trucks. Do not use low flash point (below 100 F.) solvents. High flash point (at or above 100 F) solvents may be used. Use proper precautions regarding toxicity, ventilation, and fire hazard consistent with the agent or solvent used.

APPENDIX A

PRE-INSPECTION CHECKLIST FOR THE DEHL, DM54, MODEL 513 TELESCOPING BOOM FORKLIFT

WASTEC

PRE-TRIP VEHICLE INSPECTION REPORT

DATE: _____

THESE CHECKS WILL BE MADE BY THE OPERATOR AT THE BEGINNING OF EACH TRIP AND THIS REPORT SIGNED BY THE OPERATOR AND HIS SUPERVISOR.

IF ANYTHING IS FOUND WRONG OR MISSING WITH THIS VEHICLE, ITEMS SHOULD BE NOTED BELOW.

ITEMS LISTED WILL BE CHECKED BEFORE VEHICLE IS PLACED INTO OPERATIONAL SERVICE.

CHECK EACH ITEM FOR EACH VEHICLE PRIOR TO PLACING INTO SERVICE

ITEMS CHECKED

	JLG SP-200	SP-300	SP-500	SP-1100	SP-1200	J.D.	SP-900	New	New
HOUR / MILEAGE									
FUEL LEVEL									
RADIATOR LEVEL									
BELT TENSION AND CONDITION									
CRANK CASE OIL LEVEL									
HYD. OIL LEVEL									
HYD. HOSE CONDITION									
BATTERY WATER LEVEL									
BATTERY CABLES									
FLUID LEAKS: OIL, WATER, FUEL									
TURN SIGNALS									
HYD. CYLINDER AND PINS									
FIR TINGUISHER									
HORN									
TAIL LIGHT									
HEAD LIGHTS									
AIR PRESSURE									
AIR TANK									
OIL PRESSURE									
WATER TEMPERATURE									
HAND BRAKES									
CLEARANCE / RUN LIGHTS									
BACK UP LIGHTS									
GEN. CHARGING									
WIPERS									
WIPER FLUID LEVEL									
STEERING									
STEERING FLUID LEVEL									
ROLL TARP AND CLAMP									
SEAT BELT									
AIR FILTER									
WINDOWS									
MIRRORS									
TIRES									
VEHICLE WASHED									
CABIN CLEANED									

COMMENTS: _____

APPROVED BY:

NAME	TITLE	DATE

REVISION HISTORY:

REVISION	DATE	SECTIONS	REASON

ANNUAL REVIEW:

NAME	TITLE	DATE

DISTRIBUTION:

DEPARTMENT/DIVISION	LOCATION



Contractor Compliance Requirements

Introduction

The safety and health of all contractors, customers, and employees of the New Hanover County Department of Environmental Management is of primary importance. As a result, the prevention of occupationally induced injuries and illnesses will be given precedence over operating productivity whenever necessary.

Our goal is to maintain a safety and health program conforming to all applicable OSHA standards and to lead in safety program management within our industry. To be successful will require contractor cooperation in all safety and health matters.

As a contractor you will be required, as part of your contract, to take an active role in the Department of Environmental Management safety and health program. The following contractor safety and health requirements, when adhered to, will ensure safety for contractors, customers, and County employees. Additionally, potential damage to equipment and property will be avoided. It is impossible to document all possible situations or to provide precise guidance for every contingency a contractor may encounter in the course of their work. However, adherence to the rules as written and the desire to apply safe work practices will result in the highest level of safety.

General Requirements

1. All contractor employees shall abide by the Department of Environmental Management safety and health rules and regulations at all times. The DEM Safety Manual is available for copy or review in each of the Department's offices.
2. The contractor and all contracted employees are required to follow the procedures for signing in and out. Procedures may differ depending on the section of the department the contractor is working in; they will be explained fully before the work begins.
3. The contractor shall have a competent individual in charge at the job site to supervise the job, conduct an adequate accident prevention program, and ensure compliance to OSHA and DEM rules.
4. All accidents or injuries shall be reported immediately to the DEM Project Manager or Safety Manager.
5. Contractor employees are not allowed to enter areas other than the work site, unless it is required for the performance of their job.
6. The contractor shall inform the Project Manager of any known hazardous conditions that exist, due to the contract work being done, in areas where Departmental employees may be exposed to the known hazards.
7. The contractor shall provide Material Safety Data Sheets for all containers of hazardous substances brought onto DEM property.
8. The contractor shall sign the "Contractor Hold Harmless" waiver form in order to use any Department equipment.
9. Periodic job site inspections will be conducted by the DEM Project Manager or Safety Manager to ensure that the job is proceeding safely in accordance with safety rules.
10. Violation of these rules is grounds for immediate termination of contract work.

Standards of Conduct

The Department of Environmental Management has established standards to ensure the smooth, safe, and efficient operations of the Department. Violation of these standards is considered serious and may lead to termination of the contract. The following are prohibited:

1. Willful damage to any Departmental property, customer property, or the property of Department employees.
2. Possession, use, or distribution of alcohol, narcotics, or illegal drugs on Department property.
3. Possession of firearms, ammunition, concealed weapons, or explosives (unless properly authorized).
4. Abusive or threatening language, harassment, disrespectful behavior, workplace violence, or interfering with the work of Department employees.
5. Theft or attempted theft from the Department or Department employees.
6. Refusal to perform contracted work or refusal to obey instructions.
7. Sleeping on the job.
8. Negligence or conduct which could result in injury or damage to property.
9. Falsification of documents.

Contractor Safety Training

Please place a check by each of the following categories in which one or more of your employees has been trained. It is understood that not all contractors will have employees who are trained in all of the areas listed.

- Personal Protective Equipment
- First Aid and CPR
- Lockout/Tagout
- Confined Space Entry
- Respiratory Protection
- Hazardous Communication
- Material Safety Data Sheets
- Fire Prevention and Protection
- Fall Protection
- Scaffolding
- Heavy Equipment Training/Certification (includes bulldozer, loader, forklift, excavator, grader, roller, back-hoe, bobcat)
- Welding, Cutting, and Brazing
- Electrical Safety
- Trenching/Excavation
- Other _____
- Other _____

* If the contracting company has ten (10) or more employees, they will be required to present OSHA 300 Logs, at a minimum for the past three calendar years, along with their bid.

The Department of Environmental Management reserves the right to ask for any training records from the categories that were checked above. The County reserves the right to reject the bid of any firm that cannot document proper safety training as it relates to conducting the work included in the contract.

Contractor Agreement to Comply

I, _____, a representative of _____ do hereby acknowledge that my company has received a copy of the guidelines governing contract work being performed on New Hanover County Department of Environmental Management property. It is agreed that as part of the contract my company and its employees will comply with these guidelines and all the written programs which apply to the work being performed.

Signed _____ Date _____

(Contractor)

Please return this signed page to the designated Department of Environmental Management Project Manager. A copy of the signed form will be kept in the Safety Officer's files.

FYI
Final
ac

DEM Electrical Safety Program

Purpose:

This program implements the OSHA standard on electrical safety-related work practices adopted in August, 1990. It sets forth safety related work practices adopted by New Hanover County in order to prevent electric shock or other injuries resulting from either direct or indirect electrical contacts, when work is performed near or on equipment or circuits which are or may be energized.

Scope and Application:

This document is applicable to all Department of Environmental Management employees who are performing duties requiring the exposure to, or potential exposure to, electrical energy both stored and residual in carrying out their normal duties.

1. This program covers electrical safety-related work practices for both qualified persons and unqualified persons who are working on, near, or with the following installations:
 - a) Premises Wiring: Installations of electrical conductors or equipment within or on buildings or other structures, and on other premises such as yards, parking or other lots and industrial substations;
 - b) Wiring for Connection to Supply: Installation of conductors that connect to the supply of electricity;
 - c) Other Wiring: Installation of other outside conductors on the premises;
 - d) Optical Fiber Cable: Installation of optical fiber cable where such installations are made along with electrical conductors;
 - e) Exposed Energized Parts: Installations that involve work performed by unqualified person on or near exposed energized parts.

2. This program does not apply to work performed by qualified persons on or directly associated with the following installations:
 - a) Communications Installations: Installation of communication equipment to the extent that the work is covered under the OSHA telecommunication standard.
 - b) Installation in Vehicles: Installation in automotive vehicles.

Definitions:

Qualified Person: means a person permitted to work on or near exposed energized parts who has been trained in and familiar with:

- a) The skill and techniques necessary to distinguish exposed live parts from other parts of electrical equipment;
- b) The skill and techniques necessary to determine the nominal voltage of exposed live parts;
- c) The knowledge, skill and techniques to work safely on energized circuits;
- d) The proper use of special precautionary techniques, personal protective equipment, insulating and shielding materials, and insulated tools: and
- e) The clearance distances for work performed near overhead lines that are specified in OSHA standards and the corresponding voltages to which he/she will be exposed.

Unqualified Person: means a person with little or no training in avoiding the electrical hazards of working on or near exposed energized parts.

On or Near: means close enough to exposed parts (by either personal contact or contact by tools or materials) for an employee to be exposed to any hazard they present.

Electrical Work in General:

Appropriate safety-related work practices will be employed to prevent electric shock or other injuries resulting from either direct or indirect electrical contact, when work is performed near or on equipment or circuits that are or may be energized. Those specific work practices shall be consistent with the nature and extent of the associated electrical hazards.

8. A lock and tag shall be placed on each disconnecting means used to de-energize circuits and equipment on which work is to be performed, except:
 - a) If a lock can not be applied, or if the tagging procedure will provide a level of safety equivalent to that obtained by the use of a lock, a tag may be used without a lock.
9. Whenever a tag is used without a lock, employees shall be trained in the following limitations of tags. Tags are essentially warning devices affixed to energy insulating devices, and do not provide the physical restraint of a lock. When a tag is attached as an energy insulating means, it is not to be removed without authorization of the authorized person responsible for it, and shall never be bypassed, ignored, or otherwise defeated. Tags must be legible and understandable by all employees as part of their energy control training. Tags must be securely attached to energy isolating devices so as to avoid inadvertent or accidental removal.
10. Each lock will be attached so as to prevent persons from operating the disconnecting means unless they resort to undue force or the use of tools.
11. Each tag should contain a statement prohibiting unauthorized operation of the disconnection means and removal of the tag.
12. No work should be performed on or near de-energized live parts, circuit or equipment until the de-energize condition has been verified.
13. Verification of the de-energized condition shall be made as follows.
 - a) A qualified person should operate the equipment operating controls or otherwise verify that the equipment cannot be started.
 - b) A qualified person should use test equipment to test the circuit elements and electrical parts of equipment to which employees will be exposed and should verify that the circuit elements and equipment parts are de-energized.
 - c) The test should also determine if any energized condition exists as a result of inadvertently induced voltage or unrelated voltage backfield even though specific parts of the circuit have been de-energized and presumed to be safe.

14. Before any circuit or equipment is re-energized - even temporarily - the following requirements shall be met in the order listed below:
 - a) A qualified person should conduct tests and visual inspections, as necessary, to verify that all tools, electrical jumpers, shorts, grounds, and other such devices have been removed, so that the circuits and equipment can be safely energized.
 - b) Employees exposed to the hazards associated with re-energizing the circuit or equipment should be warned to stay clear of circuits and equipment.
 - c) Each lock and tag shall be removed by the employee who applied it.
 - d) If that employee is absent from the workplace, then the lock may be removed but following the guidelines within the Lock out - Tag out procedure.
 - e) There should be a final visual determination that all employees are clear of the circuit and equipment.
15. Conductors and parts of electric equipment that have been de-energized but have not been locked out or tagged out in accordance with the foregoing rules should be treated as energized parts, and the requirements listed in the next section of this program apply to work on or near them.

Work On or Near Exposed Energized Parts:

1. In those cases where the exposed live parts are not de-energized either because of increased or additional hazards or because of infeasibility due to equipment design or operational limitations other safety-related work practices should be used to protect employees who may be exposed to the electrical hazards involved.
2. Those work practices should protect employees against contact with energized circuit parts directly with any part of their body or indirectly through some conductive object or where employees are near enough to be exposed to any hazard they present.
3. The work practices that are used will be suitable for the conditions under which the work is to be performed and for the voltage level for the exposed electric conductors or the circuit parts in accordance with the requirements listed below.
4. Only qualified persons should work on electric circuit parts or equipment that has not been de-energized under the procedures listed in the preceding section of this program.

5. Such persons will be capable of working on energized circuits and shall be familiar with the proper use of special precautionary techniques, personal protective equipment, insulating and shielding material, and insulated tools.
6. Whenever work is to be performed near overhead lines, the lines should be reenergized and grounded, or other protective measures should be provided before the work is started.
7. When overhead lines are to be de-energized, arrangements to de-energize and ground them should be made with the person or organization that operates or controls the electrical circuits involved.
8. When protective measures are provided such as guarding, isolating, or insulating, those precautions should prevent employees from contacting such lines directly with any part of their body or indirectly through conductive materials, tools, or equipment.
9. No person except a qualified person as defined in this program shall be permitted to install insulating devices on overhead power transmission or distribution lines.
10. Whenever an unqualified person is working in an elevated position near overhead lines, the location should be such that the person and the longest conductive object he or she may contact cannot come closer to any unguarded, energized overhead line than the following distances:
 - a) For voltages to ground 50 kV - 10 ft.
 - b) For voltages to ground over 50 kV - 10ft, plus 4 inches for every 10 kV over 50 kV
11. Whenever an unqualified person is working on the ground in the vicinity of overhead lines, the person should not bring any conductive object closer to unguarded, energized overhead lines, than the distances given in paragraph 10. above.
12. For voltages normally encountered with overhead power lines, objects which do not have an insulating rating for the voltage involved are considered to be conductive.
13. Whenever a qualified person is working in the vicinity of over-head lines, whether in an elevated position or on the ground, the person should not approach or take any conductive object without an approved insulating handle close to exposed energized parts unless:
 - a) The person is insulated from the energized part. Gloves, with sleeves if necessary, rated for the voltage involved, are considered to be insulation for the person from the energized part on which work is performed.

b) The energized part is insulated from all other conductive objects at a different potential and from the person, or

c) The person is insulated from all conductive objects at a potential different from that of the energized part.

14. The minimum approach distances referred to above shall be as follows:
Voltage Range (Phase to Phase) Minimum Approach Distance

300V or less Avoid Contact
Over 300V, not over 750V 1 ft. 0 in.
Over 750V, not over 2kV 1 ft. 6 in.
Over 2kV, not over 1 5kV 2 ft. 0 in.
Over 15kV, not over 37kV 3 ft. 0 in.
Over 37kV, not over 87.5kV 3 ft. 6 in.
Over 87.5kV, not over 121kV 4 ft. 0 in.
Over 121kV. not over 140kV 4 ft. 6 in.
15. Any vehicle or mechanical equipment capable of having parts of its structure elevated near energized overhead lines should be operated so that a clearance of 10 ft. is maintained. If the voltage is greater than 50kv, the clearance should increase accordingly.
16. Employees should not enter spaces containing exposed energized parts, unless illumination is provided that enables the employee to perform the work safely.
17. Where lack of illumination or an obstruction precludes observation of the work to be performed, employees should not perform tasks near exposed energized parts.
18. Employees must not blindly reach into areas which may contain energized parts.
19. Whenever a employee works in a confined or enclosed space (such as a manhole or vault) that contains exposed energized parts, he/she must be provided with, and use, protective shields, protective barriers, or insulating materials as necessary to avoid inadvertent contact with those parts.
20. Doors, hinged panels, and the like that are present in any confined or enclosed space should be secured to prevent their swinging into an employee and causing the employee to contact exposed energized parts.
21. Conductive materials and equipment that are in contact with any part of an employee's body should be handled in a manner that will prevent them from contacting exposed energized conductors or circuit parts.

22. Whenever an employee must handle long conductive objects (such as ducts and pipes) in areas with exposed live parts, appropriate work practices should be instituted which will minimize the hazard.
23. Portable ladders should have non-conductive side rails if they are used where the employee or ladder could contact exposed energized parts.
24. Conductive articles of jewelry and clothing should not be worn if they might contact exposed energized parts.
25. Where live parts present an electrical contact hazard, employees should not perform housekeeping duties at such close distances to the parts that there is a possibility of contact, unless adequate safeguards are provided.

Use of Portable Electric Equipment:

1. All cord- and plug- connected electric equipment, flexible cord sets (extension cords), and portable electric equipment should be handled in a manner that will not cause damage.
2. Flexible electric cords connected to equipment should not be used for raising or lowering the equipment.
3. Flexible cords should not be fastened with staples or otherwise hung in such a fashion as could damage the outer jacket or insulation.
4. Portable cord- and plug- connected equipment and flexible cord sets should be visually inspected before use on any shift for external defects and for evidence of possible internal damage.
5. If there is a defect or evidence of damage that might expose an employee to injury, the defective or damaged item should be removed from service, and no employee should use it until necessary repair and tests have been made to render the equipment safe.
6. Whenever an attached plug is to be connected to a receptacle, the relationship of the plug and receptacle contacts should first be checked to ensure that they are of proper mating.
7. A flexible cord used with grounding type equipment should contain an equipment grounding connector.

8. Attachment plug and receptacles should not be connected or altered in a manner that would prevent proper continuity of the equipment grounding conductor at the point where plugs are attached to receptacles. Additionally, those devices should not be altered to allow the grounding pole of a plug to be inserted into slots intended for connection to the current-carrying conductors.
9. Portable electric equipment and flexible cords used in highly conductive work locations (such as those inundated with water or other conductive liquids), or in job locations where employees are likely to contact water or conductive liquids, should be approved for those locations.
10. Employee's hands should not be wet when plugging and unplugging flexible cords and cord- and plug- connected equipment, if energized equipment is involved.
11. Energized plug and receptacle connections should be handled only with insulating protective equipment if the condition of the connection could provide a conducting path to the employee's hand.
12. Locking-type connectors should be properly secured after connection.

Electric Power and Lighting Circuits:

1. Load rated switches, circuit breakers, or other devices specifically designed as disconnecting means should be used for the routine opening, reversing, or closing of circuits under load conditions.
2. Cable connectors not of the load-break type, fuses, terminal lugs, and cable splice connections should not be used for such purposes, except in emergency.
3. After a circuit is de-energized by a circuit protective device, the circuit shall not be manually re-energized until it has been determined that the equipment and circuit can be safely energized. However, when it can be determined from the design of the circuit and the over current devices involved that the automatic operating of a device was caused by an overload rather than a fault condition, no examination of the circuit or connected equipment is needed before the circuit is re-energized.
4. Circuit breakers or fuses should not be repetitively closed or replaced on reenergized circuits.
5. Over current protection of circuits and conductors should not be modified, even on a temporary basis, beyond that allowed by the OSHA standard regulating installation safety requirements for over current protection.

Test Instruments and Equipment:

1. Only qualified persons should perform testing work on electric circuits or equipment.
2. Test instruments and equipment and all associated test leads, cables, power cords, probes and connectors should be visually inspected for external defects and damage before the equipment is used. If there is a defect or evidence of damage that might expose an employee to injury, the defective or damaged item should be removed from service, and no employee may use it until necessary repairs and tests to render the equipment safe have been made.
3. Test instruments and equipment and their accessories should be rated for the circuit and equipment to which they will be connected and should be designed for the environment in which they will be used.

Use of Flammable or Ignitable Materials:

1. In those situations where flammable materials are present only occasionally, electric equipment capable of igniting them should not be used, unless measures are taken to prevent hazardous condition from developing.
2. Such materials include, but are not limited to: flammable gases, vapors, or liquids; combustible dust; and ignitable fibers.
3. In those situations where flammable vapors, liquids, or gases, or combustible dusts or fibers are (or may be) present on a regular bases, the electrical installation requirements contained in the OSHA standard regulating hazardous locations should be observed.

Personal Protection Safeguards:

1. Employees working in areas where there are potential electrical hazards shall be provided with, and use, electrical protective equipment that is appropriate for the specific parts of the body to be protected and for the work to be performed. Such equipment includes rubber protecting equipment such as insulating gloves, blankets, hoods, line hose, sleeves, and matting for use around electric apparatus. See the OSHA standard on electrical protective devices, 191 0.137.
2. Protective equipment shall be maintained in a safe, reliable condition and shall be periodically inspected or tested, as required by 1910.137.
3. If the insulating capability of protective equipment may be subject to damage during use, the insulating material shall be protected.

4. Employees shall wear nonconductive head protection whenever there is a danger of head injury from electric shock or burns due to contact with exposed energized parts.
5. Employees shall wear protective equipment for the eyes or face whenever there is danger of injury to the eyes or face from electric arcs or flashes or from flying objects resulting from an electrical explosion.
6. When working near exposed energized conductors or circuit parts, each employee shall use insulated tools when handling the tools might make contact with such conductors or parts. If the insulating capability of insulated tools or equipment is subject to damage, the insulating material shall be protected.
7. Fuse handling equipment, insulated for circuit voltage, will be used to remove and install fuses when the fuse terminals are energized.
8. Ropes and handlines used near energized parts will be nonconductive.
9. Protective shields, protective barriers, or insulating materials will be used to protect each employee from shock, burns, or other electrically related injuries while that employee is working near exposed energized parts which might be accidentally contacted or where dangerous electrical heating or arcing might occur.
10. When normally enclosed live parts are exposed for maintenance or repair, they shall be guarded to protect unqualified persons from contact with the live parts.
11. Guarding techniques shall be used to warn and protect employees from hazards which could cause injury due to electrical shock, burns, or failure of electric equipment parts as follows:
 - a) Safety Signs and Tags. Safety signs, safety symbols, or accident prevention tags will be used where necessary to warn employees about electrical hazards which might endanger them.
 - b) Barricades. Barricades will be used in conjunction with safety signs where it is necessary to prevent or limit employee access to work areas exposing employees to annulated energized conductors or circuit parts. Conductive barricades cannot be used where they might cause an electrical contact hazard.
 - c) Attendants. If signs or barricades do not provide sufficient warning and protect employees.

Training:

1. Appropriate training will be provided for those employees who face a risk of electric shock that is not reduced to a safe level by the OSHA electrical installation requirements.
2. Electricians and welders always face such a risk and must be provided with appropriate training. That is also true for blue collar supervisors, electrical and electronic engineers, electrical and electronic technicians, and others unless their work or the work of those they supervise does not bring them or their employees close enough to exposed parts of electric circuits operating at 50 volts or more to ground for a hazard to exist.
3. Each employee required to be trained should be trained in, and should become familiar with, the safety related work practices required by this program or the OSHA standards pertaining to their respective job assignments.
4. Employees who are covered by paragraph 1 of this section, but who are not qualified persons, should also be trained in, and familiar with any electrically related safety practices not specifically addressed by OSHA standards but which are necessary for their safety.
5. Qualified persons will, at a minimum, be trained in and familiar with the following:
 - a) The skills and techniques necessary to distinguish exposed live parts from other parts of electric equipment.
 - b) The skills and techniques necessary to determine the nominal voltage of exposed parts, and
 - c) The clearance distances and the corresponding voltages to which the qualified person will be exposed.
6. The training shall be either classroom, on-the-job, or both.
7. The degree of training will be determined by the risk likely to be encountered by the employee. The employee's manager and or supervisor are responsible to assure that all personnel under their supervision exposed to potential electrical hazards are properly trained. The manager and or supervisor must assure that training is adequate based on the employee's exposure and risk.