

New Hanover County Safety Policies

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I - COUNTY CONFINED SPACE PROGRAM

New Hanover County has established the following permit-required confined space program to protect employees involved in confined space entry at its facilities. Confined space entry can pose a number of hazards to an employee's safety including exposure to toxic or asphyxiating atmosphere. Engulfment is another hazard employees may face when dealing with spaces that contain finely divided particulate matter, such as grains, sands or powdered chemical materials. The hazards of fire are also a concern when spaces have contained flammable materials. The combination of these hazards is compounded by the fact that many confined spaces have limited access for entry and exit - and for rescue as well. Permit-required confined spaces covered by this program have, or may have, the following characteristics:

1. Actual or potential hazardous atmosphere,
2. Engulfment hazard,
3. Internal configuration that could trap an employee, or
4. Other serious safety or health hazards.

Entry into any space designated as a permit-required confined space must be conducted under the policies outlined here. Employees involved in entry operations will be trained in relation to their duties as entrants, attendants, and entry supervisors. If you have not been trained and are not designated duties involving entry, DO NOT ENTER a confined space.

Unauthorized Entry

Unauthorized entry will NOT be allowed. Any employee not specifically identified on an entry permit as an entrant will be considered unauthorized and will be subject to disciplinary measures. It is the County's policy to prohibit unauthorized entry at all times, and to require full permit procedures when entering any permit-required confined space. This policy covers maintenance activities, repairs, and routine inspections -- shortcuts due to time/production demands will not be allowed. If you encounter an unauthorized entry in progress, it is to be reported immediately to the entry supervisor.

Entry Procedures

Whenever possible, work or repairs will be conducted from outside the space. If entry is necessary, it will be conducted as outlined in the following procedures:

1. The permit space will be identified by the entry supervisor, and reason for entry will be reviewed to determine necessity.

2. Isolation of the space, if possible, will be completed. This includes blocking, blinding, or misaligning all pipes or flow lines into and out of the space in question. As required by OSHA regulation 1910.147, Control of Hazardous Energy (Lock out / Tag out), the confined space will be isolated by lock out or tag out of electrical, mechanical, pneumatic and hydraulic energy.
3. Atmospheric hazards will be brought under control by flushing, purging, or ventilation. Forced air ventilation will be installed under the guidance of the entry supervisor to ensure that fresh air is entering the space and effectively displacing the contaminants. Ventilation will be installed in a fashion that keeps contaminants from being reticulated. Ventilation will be checked periodically to determine that the fresh air source has not been effected by other activities in the area.
4. Barriers will be installed at the start of the permit entry. Barriers will be installed in such a fashion to protect entrants from external hazards, and to stop any access to the permit space by unauthorized personnel. The barriers will remain in place throughout the duration of the entry activities.
5. Acceptable entry conditions will be maintained at all times. Atmospheric testing will be conducted at least hourly to determine that oxygen, flammable, and toxins are within allowable limits. Oxygen concentration will be between 19.5% and 23.5%. Flammable will not exceed 10% of the LFL (Lower Flammable Limit) and toxins will remain below the PEL (Permissible Exposure Limit). If any condition arises within the confined space or arises in the surrounding area which would jeopardize the safety of the entrant, it will be considered outside the norm of acceptable entry conditions and entry activities will stop.

Monitoring Procedures

The County has established a policy of continuous monitoring of permit spaces to be conducted at least every hour or more often as conditions warrant. Repeated monitoring is required to provide documentation that the space continues to be safe and acceptable entry conditions are being met. Monitoring will only be conducted by employees trained in the use of and calibration of the test equipment. As was noted in this policy, sampling strategy will require that oxygen levels be monitored first. Flammable will be monitored second, and other toxic contaminants will be sampled last.

Attendants

An attendant will be stationed outside the permit space at all times during entry. If for any reason the assigned attendant must leave, the entry supervisor must be notified. A replacement attendant will be stationed at the permit space until relieved by the original attendant or entry is completed.

All appointments, promotions, and other personnel transactions shall be made solely on the basis of merit and fitness.

Duties of the Attendant

All attendants are to receive training as to their duties as follows:

1. Recognize hazards associated with the confined space,
2. The signs of exposure and behavioral effects of hazard exposure,
3. Who and how many personnel are in the confined space,
4. Means of communication with the entrants,
5. Not allow unauthorized persons to enter the permit space.

Entrants

An entrant shall mean an employee who is authorized to enter a permit space.

Duties of an Entrant

1. Know the hazard that may be faced during entry,
2. Be aware of possible behavioral effects of hazard exposure,
3. Know how to use all required equipment to maintain safety within a permit space,
4. Communicate with the attendant as necessary to enable the attendant to monitor the entrant status,
5. Exit the permit space when conditions warrant or when advised by the attendant or entry supervisor.

Entry Supervisor

The entry supervisor is both responsible for initiating and terminating the permit. He or she is responsible for ensuring that all essential tests are conducted and recorded on the permit as well as entry procedures and equipment are in place before endorsing the permit and allowing entry. The supervisor is responsible for ensuring that the means for summoning rescue and emergency services are operable.

The entry supervisor must know the hazards associated with the confined space and be able to recognize signs and symptoms of exposure to those hazards. This includes a knowledge of how a person can become exposed and the consequences of an exposure. He/she must ensure that entry conditions and operations are consistent with the entry permit, including the expulsion if unauthorized personnel from the permit space.

II - PROTECTIVE CLOTHING AND EQUIPMENT

The variety of work operations performed by County employees involve many industrial hazards. The tasks performed, range from custodial services to construction activities. In all tasks, however, there are counterparts in private industry where much research has been done to develop measures to protect employees from accidental injury. Where possible, this is done by "Engineering Out" the hazard. Most commonly, this is done by providing guards for various types of machinery.

All machine guards shall be kept in place while machinery is in operation. Tampering with machine guards is prohibited and any removal requires prior approval by the supervisor. All guards are to be properly replaced after repair work has been completed. When necessary to work on electrically driven machinery, the disconnect switch for controlling the machinery shall be secured in the open or off position by the worker or workers performing the job. The securing device should not be removed until the work has been completed and the area cleaned.

When it is not possible to place a guard over the source of the hazard, then it becomes necessary to place the guard on the employee. This is done by wearing approved personal protective equipment such as hard hats, safety belts, safety goggles, traffic vests, face shields, gloves, safety shoes, respirators, etc. Supervisors should ensure that all their employees are properly protected. Local dress codes may be established within a particular department, division, or work area, and each employee is expected to know and follow these codes where applicable.

Every possible effort will be made by management to select protective clothing and equipment that is acceptable for comfort, appearance, and utility while affording the desired protection. Employee's personal safety is based on knowledge of the hazards of the job, knowledge of the protection available, and a commitment to wear available personal protective equipment when needed.

GENERAL CLOTHING

1. For safety and comfort, work cloths should be sturdy, fit well, and be washable.
2. Loose clothing worn by employees working on or near moving machinery or equipment is prohibited.
3. Steel-toe shoes should be worn on all jobs involving moving or handling heavy material. Excessively high heeled shoes may create a tripping hazard. Soft soled shoes (such as athletic shoes) do not afford protection from puncture wounds when in the field. Shoes with worn down heels and torn soles are hard on the feet and can cause falls. Keep your shoes in good repair.
4. The safe worker does not wear rings, medals, identification bracelets, or other jewelry. Jewelry increases the danger of electrical shock and can become entangled in machinery, causing severe injuries to employees.
5. Work clothes should be washed frequently as a safeguard against skin infection and irritations.
6. Smocks, overalls, and aprons should be worn whenever possible to keep work clothed clean.

7. For outdoor work in winter weather, it is best to wear several layers of loose, warm, lightweight clothing. This will enable workers to remove layers of clothing as the temperatures rise or add layers as the temperatures fall.
8. Oil soaked clothes are a serious fire hazard. Keep your clothes free from oil.

HEAD PROTECTION

County employees are required to wear hard hats while performing construction

and maintenance activities that involve working above or below ground levels, transporting materials overhead, or working near construction machinery. Hard hats are provided to help prevent head injuries from falling objects or prevent bumps while working in a confined space. The construction and shape of hard hats shall not be altered in any manner by employees. Hard hats shall not be painted because it alters the dielectric properties of the hat. A hard hat is a personal item and should be and for the exclusive use of the person to whom it is issued.

Hard hat types, complying with OSHA and approved by the Department Head, should be worn by the following employees:

1. Engineering office personnel while on the job site for any public construction or maintenance project.
2. All Water/Sewer personnel while on the job site involving any work being done within twenty (20) feet of the outside edge of any street, road, or other area used for vehicular traffic.
3. Supervisors may designate additional areas where hard hats usage is required as the need arises.

FACE AND EYE PROTECTION

Hazards involving the possibility of injuries to the face and eyes exist in both indoor and outdoor tasks. They range from dust blown into the eyes on a windy day to particles of steel, sand, concrete, etc., propelled into the eyes with considerable force by power tools and machinery, or splashes of corrosive dust and liquid chemicals.

There are many types of safety glasses, goggles, shields, etc., made of glass or plastic to protect the worker from these hazards. The loss of one or both eyes can have extremely serious consequences to an employee. Yet individuals often vigorously resist efforts by management to require this vital protection for no better reason than slight discomfort. This is probably one of the most important protective features of any safety program, yet one of the most difficult to sell.

Face and eye protection should be provided for any task where there is a probability that an injury may occur without such protection. Employees assigned to perform tasks that require eye protection should wear the protection provided.

Safety glasses, goggles, and other eye protective equipment offer vital protection. If sufficient care is not exercised to maintain them properly, dirty or scratched lenses may present yet another hazard resulting from poor vision.

The following safety procedures shall be established:

1. Safety goggles or safety glasses with temple shields shall be worn when:
 - Grinding, cutting, milling or drilling with power tools.
 - Using impact wrenches and compressed air tools.
 - Chipping, scrapping, or scaling paint, rust, carbon or other materials.
 - Using punches, chisels, or other impact tools.
 - Cutting rivets.
 - Cutting or breaking glass.
 - Chipping or breaking concrete.
 - Pipe cutting or threading.
 - Using paint remover.
 - Using power activated tools.
 - Soldering.
 - Sand blasting or air cleaning operations
 - Using metal cutting lathes, shapers, drill press, power hack saws and other metal working tools.
 - Using power woodworking machinery, both fixed and portable.
 - Tree trimming, brush chipping.
 - Using brush cutters.
 - Washing vehicle parts with soap or solvents.
 - Working under vehicles.
 - Using push and riding type rotary lawn mowers.
2. A full plastic face shield shall be worn when handling acids, caustics, and other harmful dusts, liquids, or gases.
3. Safety glasses shall be worn when performing electrical switching operations or activating high voltage circuits where arcs may occur.
4. A face shield with proper filter lens, welder's lens, or welder's goggles shall be worn in all welding or cutting operations.

ELECTRIC ARC WELDING

- 1. Welder's helmet with proper filter lens shall be worn.
2. Portable welding screens shall be used to protect the eyes of others in the vicinity whenever potential exposure to others exists.
3. Helpers and observers shall wear safety glasses, goggles, or hand held shields with proper filter lenses.

GAS WELDING AND CUTTING

- 1. Welder's goggles with proper filter lenses shall be worn.
2. Portable welding screens shall be used to protect the eyes of others in the vicinity whenever potential exposure to others exists.

Eye protection may be required on other jobs not listed, if so designated at the time by your supervisor. Beyond this, you are encouraged to wear eye protection at all times.

REMEMBER - YOU HAVE BUT ONE PAIR OF EYES - THEY CAN NOT BE REPLACED - SO PROTECT THEM.

HEARING PROTECTION

In the variety of activities conducted by County employees, there are some machines or equipment that may produce sound levels in the frequencies which cause hearing loss. When employees are subjected to excessive sound levels, attempts should be made to use engineering controls. If the sound level can not be reduced within tolerable levels, then personal protective equipment shall be provide and shall be worn by employees so exposed.

Hearing protection may consist of ear muffs, ear plugs, or disposable material. The type most acceptable to employees shall be provided whenever possible, as long as it achieves sufficient reduction of noise exposure. Cotton should not be used as ear plugs.

FOOT PROTECTION

Many tasks involve manual lifting and handling of heavy tools and materials. Foot injuries occur frequently when heavy objects are dropped, resulting in bruises, dislocations, fractures, or crushes. Shoes, rubber boots, etc. , reinforced with steel-toes or soles will prevent foot injuries from impacts with falling objects, stepping on sharp objects, or exposure to blades of power tools. This footwear is available in a variety of comfortable styles.

Wearing of sandals or athletic shoes in County work areas (where chances of foot injuries are greatest) is prohibited.

FINGER, PALM, AND HAND PROTECTION

One of the most dangerous ornaments worn by employees in occupational or industrial work is the ring. It should not be worn at work if there is the slightest chance it could become caught in any hook, tool, or piece of machinery. Rings can cause loss of fingers and/or painful lacerations. Frequently they have to be cut from employees' fingers if they become bent in such a manner as to cut off circulation.

Gloves with leather palms should be worn when handling rough edges or abrasive materials or when the job subjects hands to possible lacerations, punctures, or burns. Other hand protection may be designated by authorized persons. Skin irritation should be prevented by washing with soap and water - not gasoline. Protective gloves designed for specific hazards should be worn when handling irritating materials or chemicals.

OTHER PROTECTIVE EQUIPMENT

Other protective equipment such as safety vests, floatation devices, safety belts, leg chaps, etc., should be worn when work involves hazards for which this type of protective equipment is called for. You or your supervisor should be aware of all hazards and the proper protective equipment needed to complete the task safely.

III - LOCK-OUT/TAG-OUT PROGRAM

Lock-out / Tag-out Policy

All equipment shall be locked out / tagged out to protect against accidental or inadvertent operation when such operation could cause injury to personnel. Do not attempt to operate any switch, valve, or other energy isolating device when it is locked out or tagged out.

Purpose

This procedure is intended to prevent fatal or serious injuries through establishment of minimum requirements for lock out / tag out of energy isolating devices whenever maintenance or servicing is done on machines or equipment. It will be used to ensure that machinery or equipment is isolated from all potentially hazardous energy, and locked out / tagged out before employees perform any servicing or maintenance activities where the unexpected energizing, start-up, or release of stored energy could cause injury.

Lock Out Devices

The device may be either a key or combination lock. Lock out devices must also indicate the identity of the employee applying the device(s), and must be affixed in a manner that will hold the energy isolating devices in a "safe" or "off" position.

Tag Out Devices

Tag out devices must be of the non-reusable type, attached by hand, self-locking, and able to withstand at least 50 lbs. of pressure before detaching. They must be of a uniform and identifiable color and must warn against the hazardous condition to be prohibited (e.g. Do Not Start, Do Not Open, etc.). Tag out devices must identify the employee who applied the device.

Responsibility

All employees will be instructed in the safety significance of the lock out / tag out procedure. All employees, upon observing a machine or piece of equipment which is locked out / tagged out will not attempt to start, energize, or use that machine or equipment.

Compliance with this policy is considered a condition of employment and failure to follow this procedure will result in discipline up to and including termination. Failure to follow this procedure is considered a serious safety rule violation.

Preparation for Lock Out / Tag Out

Employees authorized to perform lock out / tag out shall be certain which switch(es), valve(s), or other energy isolating devices apply to the equipment to be locked out / tagged out. Pay particular attention to stored potential energy such as power press rams which could fall. More than one energy source (electrical, mechanical, or others) may be involved.

Sequence of Lock Out / Tag Out procedure

1. Notify all affected employees that a lock out / tag out system is going to be utilized and the reason for this step. The authorized employee will know the type and magnitude of energy that the machine or equipment utilizes and will understand the hazards.

2. If the machine or equipment is operating, shut it down by the normal stopping procedure.
3. Operate the switch, valve, or other energy isolating device(s) so that the equipment is isolated from its energy source(s). Stored energy must be dissipated or restrained by methods such as grounding, blocking, bleeding down, etc.
4. Lock out the energy isolating devices with assigned individual lock(s) with attached identification tag.
5. After ensuring that no personnel are exposed, and as a check on having disconnected the energy sources, operate the push button or other normal operating controls to make certain the equipment will not operate.

Caution: Return operating control(s) to "neutral" or "off" position after the test.

6. The equipment is now locked out.

RESTORING MACHINES OR EQUIPMENT TO NORMAL OPERATIONS

7. After the servicing and/or maintenance is completed and equipment is ready for normal operations, check the area around the machines or equipment to ensure that no one is exposed.
8. After all tools have been removed from the machine or equipment, guards have been reinstalled and employees are in the clear, remove all lock out devices. Operate the energy isolating devices to restore energy to the machine or equipment.

Procedure Involving More Than One Person

In the preceding steps, if more than one person is required to lock-out / tag-out the equipment, each will place his/her own personal lock out device and identification tag on the energy isolating device(s). When an energy isolating device cannot accept multiple locks, a multiple lock out device (hasp) must be used.

Procedure Involving Shift Change

If a machine or piece of equipment must be locked out beyond the end of one shift, the supervisor of the shift going off must place his/her lock and tag on the machinery. Then all other employees who had locked the machine out may remove their locks. The next shift supervisor will then place his/her lock on the machine. When all employees who will be working on the machine during the next shift have placed their locks on the machine, the supervisor may remove his/her lock.

If a machine will be locked out for several shifts or days and no work will be done during that time, then a supervisor's lock must be left on the machine. In this case, it is VERY important the lock have an identification tag.

Procedure for Removal of Lock Out Device by Management

Only the Department Head or his/her designated representative is authorized to remove a lock out / tag out device placed on a machine or piece of equipment by another employee. He/she will have a master key to all lock out devices, and must follow these steps:

1. Personally attempt to locate the employee who originally placed the lock on the machine. This must include attempts to contact the employee at home.
2. Personally check with the employee's supervisor, if necessary at home, to attempt to ascertain why the machine is locked out.
3. Personally go to the machine to attempt to ascertain why it is locked out and question the manager and supervisor of that section along with employees who work on the machine.
4. If the employee who originally locked out the machine cannot be located and the department head is satisfied that the machine or piece of equipment is safe to use, he/she may remove the lock out device. The Department Head assumes full responsibility of this act.

IV - RESPIRATORY PROTECTION

I. Purpose

This document provides information and guidance necessary to ensure that the respiratory protection program for New Hanover County is consistent with the Occupational Safety and Health Administration (OSHA) standards. This document outlines the minimal acceptable requirements for a respiratory protection program, delineates responsibilities, provides selection criteria in determining respiratory protection needs, and lists currently approved respiratory protective devices used by New Hanover County. This document implements the provisions of Title 29, Code of Federal Regulations (CAR), Section 1910.139, Respiratory Protection.

Documentation required to be retained by this procedure and the standard shall be made available upon request to affected employees and to the Assistant Secretary or designee for examination and copying.

II. Scope and Responsibility:

This document is applicable to all New Hanover County employees who are performing duties requiring the use of respiratory protection to prevent unnecessary exposure to airborne concentrations of toxic materials equal to or greater than the permissible limits established in existing Federal OSHA standards or criteria.

III. Definitions:

For the purpose of this procedure, the following definitions apply:

1. *Air Purifying Respirators* - A respirator with an air-purifying filter, cartridge, or canister that removes specific air contaminants by passing ambient air through the purifying element.
2. *Atmosphere-Supplying respirator* - A respirator that supplies the respirator user with breathing air from a source independent of the ambient atmosphere and includes supplied-air respirators (SAYS) and self-contained breathing apparatus (SCBA) units.
3. *Canister or Cartridge* - A container with a filter, sorbent, catalyst or combination of these items, which removes specific contaminants from air passed through the container.
4. *Demand Respirator* - An atmosphere supplying respirator that admits breathing air to the face piece only when a negative pressure is created inside the face piece by inhalation.
5. *Emergency situation* - Any occurrence, such as, but not limited to, equipment failure, rupture of containers or failure of control equipment that may or does result in an uncontrolled significant release of an airborne contaminant.

6. *Employee Exposure* - Exposure to a concentration of an airborne contaminant that would occur if the employee were not using respiratory protection..
7. *End of Service Life Indicator (ESLI)* - A system that warns the respirator user of the approach of the end of adequate respiratory protection, for example, the sorbent is approaching saturation and is no longer effective.
8. *Escape only respirator* - A respirator intended to be used only for emergency exit.
9. *Filter or Air-purifying Element* - a component used in respirators to remove solid or liquid aerosols from the inspired air.
10. *Filter face piece (dust mask)* - A negative pressure particulate respirator with a filter as an integral part of the face piece or with the entire face piece composed of the filtering medium.
11. *Fit factor* - A quantities estimate of the fit of a particular respirator to a specific individual and typically estimates the ration of the concentration of a substance in ambient air to its concentration inside the respirator when worn.
12. *Fit test* - The use of a protocol to qualitatively or qualitatively evaluate the fit of a respirator to an individual.
13. *Helmet* - A rigid respiratory inlet covering that also provides head protection against impact and penetration.
14. *Immediately Dangerous to Life and Health (IDLH)* - An atmosphere that poses immediate threat to life, would cause irreversible adverse health effects or would impair an individual's ability to escape from a dangerous atmosphere.
15. *Interior Structure Firefighting* - The physical activity of fire suppression, rescue or both, inside of buildings or enclosed structures which are involved in a fire situation beyond the incipient stage.
16. *Loose-fitting Face piece* - A respiratory inlet covering that is designed to form a partial seal with the face.
17. *Negative Pressure Respirator (tight fitting)* - A respirator in which the air pressure inside the face piece is negative during inhalation with respect to the ambient air pressure outside the respirator.
18. *Oxygen Deficient Atmosphere* - An atmosphere with an oxygen content below 19.5% by volume.
19. *Physician or other Licensed Health Care Professional (PLHCP)* - An individual whose legally permitted scope of practice allows him or her to independently provide, or be delegated the responsibility to provide some or all of the health care services required by 29 CAR 1910.134.

- .20. *Positive Pressure Respirator* - A respirator in which the pressure inside the respirator inlet covering exceeds the ambient air pressure outside the respirator.
21. *Powered Air Purifying Respirator (PAPR)* - An air purifying respirator that uses a blower to force ambient air through air-purifying elements to the inlet covering.
22. *Pressure Demand Respirator* - a positive pressure atmosphere supplying respirator that admits breathing air into the face-piece when the positive pressure is reduced inside the face piece by inhalation.
23. *Program Administrator* - One who is qualified by appropriate training or experience that is commensurate with the complexity of the program to administer or oversee the respiratory protection program and conduct the required evaluations of the program effectiveness. New Hanover County's Respiratory Protection Program Administrator shall be the Safety Officer.
24. *Qualitative Fit Test (QLFT)* - A pass/fail fit test to assess the adequacy of respirator fit that relies on the individual's response to the test agent.
25. *Quantities Fit Test (QNFT)* - An assessment of the adequacy of the respirator fit by numerically measuring the amount of leakage into the respirator.
26. *Respiratory Inlet Covering* - That portion of a respirator that forms the protective barrier between the user's respiratory tract and an air-purifying device or breathing air source or both. It may be a face piece, helmet, hood, suit or a mouthpiece respirator with nose clamp.
- .27. *Self-Contained Breathing Apparatus (SCBA)* - An atmosphere supplying respirator for which the breathing air source is designed to be carried by the user.
- .28. *Service Life* - The period of time that a respirator, filter or sorbent, or other respiratory equipment provides adequate protection to the wearer.
29. *Supplied Air Respirators (SAR) or Airline Respirator* - An atmosphere-supplying respirator for which the source of breathing air is not designed to be carried by the user.
30. *Tight Fitting Face piece* - A respiratory inlet covering that forms a complete seal with the face.
31. *User Seal Check* - An action conducted by the respirator user to determine if the respirator is properly seated to the face.

IV. Selection of Respirators

A. General Requirements

1. The Program Administrator will evaluate the respiratory hazards in the workplace, identify relevant workplace and user factors and base respirator selection on these factors. This evaluation shall include a reasonable estimate of employee exposure to respiratory hazards and an identification of the contaminant's chemical state and physical form. In the cases where employee exposure cannot be identified or reasonably estimated, the atmosphere shall be considered IDLH.
2. Front line supervisors shall advise the Program Administrator of all activities which may expose employees to airborne contamination of toxic materials equal to or greater than the permissible limits established in existing Federal OSHA standards or criteria.
3. The Program Administrator shall select and the employee's Department shall provide an appropriate respirator based on the respiratory hazard to which the worker is exposed and workplace and user factors that effect respirator performance and reliability.
4. Department management shall ensure that only NIOSH approved respirators shall be used and that all filters, cartridges and canisters used in the workplace are labeled and color coded with the NIOSH approval label and that the label is not removed and remains legible.
5. Department management shall provide a sufficient number of respirator models and sizes so that the respirator is acceptable to and correctly fits the employee.
6. In areas where there exist no harmful airborne concentrations of toxic materials equal to or greater than the permissible limits established in existing Federal OSHA standards which may compromise the safety or health of an employee, respirators are not required.

B. Respirators for IDLH Atmospheres

1. For use in IDLH atmospheres, the Department shall supply and the employee shall only use:
 - a) A full face piece pressure demand SBA certified by NIOSH for a minimum service life of thirty minutes, or
 - b) A combination full face piece pressure demand supplied-air respirator (SAR) with auxiliary self-contained air supply.
2. Respirators provided only for escape from IDLH atmospheres shall be NIOSH-certified for escape from the atmosphere where they will be used.
3. All oxygen-deficient atmospheres shall be considered IDLH.

C. Respirators for atmospheres not IDLH

1. The respirator selected shall be appropriate for the chemical state and physical form of the contaminant.
2. For protection against gases and vapors, only the following respirators shall be used:
 - a) An atmosphere supplying respirator, or
 - b) An air purifying respirator, provided that:
 - 1) The respirator is equipped with an end-of-service life indicator (ESLI) certified by NIOSH for the contaminant: or
 - 2) If there is no ESLI appropriate for the conditions in the employees workplace, the Administrator shall implement a change schedule that ensures that canisters and cartridges are changed before the end of their service life. The information used as a basis for the change schedule and the basis for reliance on the data shall be included in this procedure.
3. For protection against particulate, the following respirators shall be used:
 - a) An atmosphere supplying respirator; or
 - b) An air-purifying respirator, provided that:
 - 1) The air-purifying respirator is equipped with a filter certified by NIOSH under 30 CAR part 11 as a high efficiency particulate air (HEPA) filter, or an air-purifying respirator equipped with a filter certified for particulate by NIOSH under 42 CAR part 84: or
 - 2) For contaminants consisting primarily of particulate with a mass median aerodynamic diameters(MMAD) of at least 2 micrometers, an air-purifying respirator equipped with any filter certified for particulate by NIOSH.
4. If "**dust mask**" are voluntarily used by the employee and not required by the Department management, nor are they necessary to protect the health of the employee, the supervisor, after consulting with the Administrator, shall provide the employee with a copy of the information in Attachment 5. Supervisors shall also ensure that such respirator use will not itself create a hazard. In such cases, other portions of this procedure do not apply.

5. If elastomeric respirators are voluntarily used by employees and are not required by the Department management, nor are they necessary to protect the health of the employee, supervisors, after consulting with the Administrator, shall be responsible for:
 - 1) Providing the employee with a copy of the information in Attachment 5.
 - 2) Ensuring that the employee has received medical clearance in accordance with the provisions of this procedure.
 - 3) Ensuring respirator use does not present a health hazard to the user.
 - 4) Ensuring the respirator is cleaned, stored and maintained in accordance with the provisions of this procedure.

V. Medical Evaluation

Using a respirator may place a physiological burden on the employee that varies with the type of respirator worn, the job and workplace conditions in which the respirator is used and the medical status of the employee. The County shall provide a medical evaluation to determine the employee's ability to use a respirator before the employee is fit tested or required to use the respirator in the workplace.

- A) The County shall select a physician or other licensed health care professional (PLHCP) to perform medical evaluations using the medical questionnaire or an initial medical examination that obtains the same information as the medical questionnaire.
 - 1) All County employees who use, or may be expected to use a respirator shall complete the medical questionnaire found in Attachment 4.
 - 2) A follow-up medical examination may be required by the PLHCP based on the results of the questionnaire of the initial medical examination.
 - 3) The medical questionnaire and examinations shall be administered confidentially during the employee's normal working hours or at a time and place convenient to the employee.
 - 4) Employees shall complete the questionnaire, place in a sealed envelope, identify the contents, place his/her name on the envelope and forward to the Administrator. The Administrator shall forward the unopened envelope to the PLHCP.

- 5) If desired, the County shall provide the employee with an opportunity to discuss the questionnaire and examination results with the PLHCP.

- 6) The following information will be provided to the PLHCP by the Administrator before the PLHCP makes a recommendation concerning an employees ability to use a respirator (see Attachment 6):
 - a) The type and weight of the respirator to be used by the employee.

 - b) The expected physical work effort.

 - c) The duration and frequency of respirator use.

 - d) Additional protective clothing and equipment to be worn.

 - e) Temperature and humidity extremes that may be encountered.

- 7) The County shall provide the PLHCP with a copy of the written Program and a copy of the standard.

- 8) The County shall obtain a written recommendation regarding the employee's ability to use the respirator from the PLHCP.

- 9) If the employee is being evaluated to wear a negative pressure respirator and the PLHCP finds a medical condition that may place the employee's health at risk, the County shall provide a PAPR if the PLHCP's medical evaluation finds that the employee can use a respirator: if a subsequent medical evaluation finds the employee medically able to use a negative pressure respirator, the County is no longer required to provide a PAPR.

- 10) Addition medical evaluations shall be provided when:
 - a) An employee reports medical or symptoms that are related to the ability to use a respirator.

 - b) A PLHCP or supervisor notifies the Administrator that an employee needs to be re-evaluated.

 - c) Information from the Program, including observations made during fit testing or program evaluation indicates a need for re-evaluation.

 - d) A change occurs in workplace conditions that result in a substantial increase in the physiological burden placed on the employee.

VI. Fit Testing

- A) Before an employee may be required to use any respirator with a negative or positive tight-fitting face piece, the employee must be fit tested with the same make, model, style and size of respirator that will be worn.
- B) Department's shall ensure that an employee using a tight-fitting face piece respirator is fit tested prior to the initial use of the respirator, whenever a different respirator face piece (size, style, model or make) is used and at least annually thereafter.
- C) Departments shall conduct an additional fit test whenever the employee reports, or the employer, PLHCP, supervisor or Administrator makes visual observations of changes in the employee's physical condition that could affect respirator fit. Such conditions include, but are not limited to, facial scarring, dental change, cosmetic surgery or an obvious change in body weight.
- D) If after passing the QLFT or QNFT, the employee subsequently notifies his/her supervisor, Administrator or PLHCP that the fit of a respirator is unacceptable, the employee shall be given a reasonable opportunity to select a different respirator face piece and be retested.
- E) The fit test shall be administered using an OSHA accepted QLFT or QNFT protocol. These are found in Attachment 1.
- F) QLFT may only be used to fit test negative pressure air-purifying respirators that must achieve a fit factor of 100 or less.
- G) If the fit factor, as determined through an OSHA accepted QNFT protocol, is equal to or greater than 100 for tight-fitting half face pieces, or equal to or greater than 500 for tight-fitting full face pieces, the QNFT has been passed with that respirator.
- H) Fit testing of tight-fitting atmosphere-supplying respirators and tight-fitting power air-purifying respirators shall be accomplished by performing qualitative or quantitative fit testing in the negative pressure mode, regardless of the mode of operation (negative or positive) that is used for respiratory protection.
 - 1) Qualitative fit testing of these respirators shall be accomplished by temporarily converting the respirator user's actual face piece into a negative pressure respirator with appropriate filters, or by using an identical negative pressure air-purifying respirator face piece with the same sealing surfaces as a surrogate for the atmosphere-supplying or powered air-purifying respirator face piece.

- 2) Quantitative fit testing of these respirators shall be accomplished by modifying the face piece to allow sampling inside the face piece in the breathing zone of the user, midway between the nose and mouth. This requirement shall be accomplished by installing a permanent sampling probe onto a surrogate face piece or by using a sampling adapter designed to temporarily provide a means of sampling air from inside the face piece.

- 3) Any modifications to the respirator face piece for fit testing shall be completely removed and the face piece restored to NIOSH-approved configuration before that face piece can be used in the workplace.

VII. Use of Respirators

- A) Respirators with tight-fitting face pieces shall not be worn by employees who have:
 - 1) Facial hair that comes between the sealing surface of the face piece and the face or that interferes with valve function: or
 - 2) Any condition that interferes with the face-to-face piece seal or valve function.

- B) If an employee wears corrective glasses or goggles or other personal protective equipment, the supervisor shall ensure that such equipment is worn in a manner that does not interfere with the seal of the face piece to the face of the user.

- C) For all tight-fitting respirators, the supervisor shall ensure that the employees perform a user seal check each time they put on the respirator using the procedures in Attachment 2 or procedures recommended by the manufacturer that the County demonstrates are as effective as those in Attachment 2 of this procedure.

VIII. Emergency Situations

In the event of respirator failure or any discrepancies noted in respirator operation during use, employees are to immediately exit the respirator required area. This may include, but is not limited to, problems with valve operations, filters, mask adjustment, regulators, air supply, alarms, air hoses or couplings and air flow. In addition, normal respirator use may reduce the effectiveness of hearing, sight and voice communications. These concerns are enhanced under emergency conditions and additional precautions should be utilized.

IX. Continuing Respirator Effectiveness

The employee's supervisor shall maintain appropriate surveillance of the work area conditions and degree of employee exposure or stress. When there is a change in work area conditions or degree of employee exposure or stress that may affect respirator effectiveness, the employer shall reevaluate the continued effectiveness of the respirator.

- A) The supervisor shall ensure that employees leave the respirator use area:
 - 1) To wash their faces and respirator face pieces as necessary to prevent eye or skin irritation associated with respirator use.
 - 2) If they detect vapor or gas breakthrough, changes in breathing resistance or leaks in the face piece.
 - 3) To replace the respirator, filter, canister or cartridge elements.
- B) If the employee detects vapor or gas breakthrough, changes in the breathing resistance or leakage of the face piece, the supervisor must replace or repair the respirator before allowing the employee to return to the work area.

X. Procedures for IDLH Atmospheres

For all IDLH atmospheres, supervisors shall ensure that:

- A) One employee or, when needed, more than one employee is located outside the IDLH atmosphere.
- B) Visual, voice or signal line communication is maintained between the employee(s) in the IDLH atmosphere and the employee(s) located outside.
- C) The employee(s) located outside the IDLH area are trained and equipped to provide effective emergency rescue.
- D) The supervisor or his/her designee is notified before the employee(s) located outside the IDLH area enter the IDLH area to provide emergency rescue.
- E) The supervisor or his/her designee, once notified, shall provide necessary assistance appropriate to the situation.
- F) Employee(s) located outside the IDLH atmospheres are equipped with:
 - 1) Pressure demand or other positive pressure SCBA's, or a pressure demand or other positive pressure supplied-air respirator with auxiliary ; and/or either

- 2) Appropriate retrieval equipment for removing the employee(s) who enter(s) the hazardous atmospheres where retrieval equipment would contribute to the rescue of the employee(s) and would not increase the overall risk resulting from entry; or
 - 3) Equivalent means of rescue where retrieval equipment is not required under paragraph (2) above.
- G) In addition to the above provisions, in interior structural fires, Fire Department Management shall ensure:
- 1) At least two employees enter the IDLH atmosphere and remain in visual or voice contact with one another at all times;
 - 2) At least two employees are located outside the IDLH atmosphere;
 - 3) All employees engaged in interior structural firefighting use SCBA's.

NOTE: One of the two individuals located outside the IDLH area may be assigned to an additional role, such as incident commander in charge or safety officer, so long as this individual is able to perform assistance or emergency rescue activities without jeopardizing the safety or health of any firefighter working at the incident. Nothing in this procedure pertaining to IDLH areas is meant to preclude firefighters from performing emergency rescue activities before an entire team has assembled.

XI. Maintenance and Care of Respirators

A) Cleaning and Disinfecting

- 1) Departments shall provide each respirator user with a respirator that is clean, sanitary and in good working order. They shall ensure that respirators are cleaned and disinfected using the procedures in Attachment 3 of this procedure or procedures recommended by the manufacturer, provided that such procedures are of equivalent effectiveness. The respirators shall be cleaned and disinfected at the following intervals:
 - a) Respirators used exclusively by an employee shall be cleaned and disinfected as often as necessary to be maintained in a sanitary condition.
 - b) Respirators issued to more than one employee shall be cleaned and disinfected following each use and inspected prior to use by another employee.

- c) Respirators used in test fitting and training shall be cleaned and disinfected after each use.

B) Storage

- 1) All respirators shall be stored to protect them from damage, contamination, dust, sunlight, extreme temperatures, excessive moisture and damaging chemicals and they shall be packed or stored to prevent deformation of the face piece and exhalation valve.

- 2) In addition, emergency respirators shall be:
 - a) Kept accessible to the work area.
 - b) Stored in compartments or in covers that are clearly marked as containing emergency respirators.
 - c) Stored in accordance with any applicable manufacturer instructions.

C) Inspections

- 1) Departments shall ensure that respirators are inspected as follows:
 - a) All respirators used in routine situations shall be inspected before each use and during cleaning.
 - b) All respirators maintained for use in emergency situations shall be inspected at least monthly and in accordance with the manufacturer's recommendations, and shall be checked for proper function before and after each use.
 - c) Emergency escape-only respirators shall be inspected before being carried into the workplace for use.

- 2) Departments shall also ensure that respirator inspection include the following:
 - a) A check or respirator function, tightness of connections and the condition of the various parts including, but not limited to, the face-piece, head straps valves, connecting tube and cartridges, filters and canisters.

 - b) A check of elastomeric parts for pliability and signs of deterioration.

- 3) In addition, self-contained breathing apparatus shall be inspected monthly. Air and oxygen cylinders shall be maintained in a fully charged state and shall be recharged when the pressure falls to 90% of the manufacturer's recommended pressure level. The Department shall determine that the regulator and warning devices function properly.

- 4) For emergency use respirators, Departments shall:
 - a) Certify the respirator by documenting the date of inspection, the name of the person performing the inspection, the finding, required remedial action and a serial number or other means for identifying the inspected respirator.

 - b) Provide this information on a tag or label that is attached to the storage compartment of the respirator, kept with the respirator, or is included in inspection reports stored as paper or electronic files. This information shall be maintained until replaced following a subsequent certification.

- 5) Department shall ensure that respirators failing an inspection or otherwise found to be defective are removed from service, discarded, repaired or adjusted in accordance with the following procedures:
 - a) Repairs or adjustments are to be made only by persons appropriately trained to perform such operations and shall use only the manufacturer's approved part designed for the respirator.

 - b) Repairs shall be made according to the manufacturer's recommendations and specifications for the type and extent of repairs to be performed.

 - c) Reducing and admission valves, regulators and alarms shall be adjusted or repaired only by the manufacturer or a technician trained by the manufacturer.

D. Breathing Air Quality

Departments shall provide employees using atmosphere supplying respirators (supplied air and SBA) with breathing gases of high purity.

- 1) Compressed and liquid oxygen shall meet the U.S. Pharmacopoeia requirements for medical or breathing oxygen.

- 2) Compressed breathing air shall meet at least the requirements for Type 1 - Grade D breathing air described in ANSI/Compressed Gas Association Commodity Specification for Air, G-7.1-1989, to include:
 - a) Oxygen content (v/) of 19.5 to 23.5 %.
 - b) Hydrocarbon (condensed) content of 5 milligrams per cubic meter of air or less.
 - c) Carbon Monoxide (CO) content of 10 ppm or less.
 - d) Carbon Dioxide content of 1,000 ppm or less.
 - e) Lack of noticeable odor.
- 3) Compressed oxygen shall not be used in atmosphere-supplying respirators that have previously used compressed air.
- 4) Only cylinders designed and approved for use to supply breathing air shall be used.
- 5) Compressors used to supply breathing air shall not be used by County employees without consulting with the Administrator.

XII. Training and Information

- A) Departments shall ensure that each employee required to wear a respirator receives effective training at least annually and can demonstrate knowledge of at least the following:
 - 1) Why the respirator is necessary and how improper fit, usage or maintenance can compromise the protective effect of the respirator.
 - 2) What the limitations and capabilities of the respirator are.
 - 3) How to use the respirator effectively in emergency situations including situations in which the respirator malfunctions.
 - 4) How to inspect, put on and remove, use and check the seals of a respirator.
 - 5) What the procedures are for maintenance and storage of a respirator.
 - 6) How to recognize medical signs and symptoms that may limit or prevent the effective use of respirators.

- 7) What respiratory hazards employees may encounter during routine and emergency situations.
- B) The training shall be conducted in a manner that is understandable to the employees.
 - C) Departments shall provide the training prior to requiring the employee to use a respirator in the workplace.
 - D) Retraining shall be administered annually and when the following situations occur:
 - 1) Changes in the workplace or the type of respirator render previous training obsolete.
 - 2) Inadequacies in the employee's knowledge or use of the respirator indicate that the employee has not retained the requisite understanding or skill.
 - 3) Any other situation arises in which retraining appears necessary to ensure safe respirator use.

XIII. Program Evaluation

- A) The Administrator shall conduct periodic evaluations of the workplace to ensure that the written respiratory protection program is being properly implemented and to consult employees to ensure that they are using the respirators correctly.
- B) Departments shall conduct evaluations of the workplaces as necessary to ensure that the provisions of the current written program is being effectively implemented and that it continues to be effective.
- C) The Administrator and Departments shall regularly consult employees required to use respirators to access the employee's view of the program effectiveness and to identify any problems. Problems that are identified during this assessment shall be corrected. Factors to be assessed include, but not limited to:
 - 1) Respirator fit
 - 2) Appropriate respirator selection for the hazards to which the employee is exposed.
 - 3) Proper respirator use under the workplace condition.
 - 4) Proper respirator maintenance.

XIV. Record keeping

Records of medical evaluations required by this section must be retained and made available in accordance with 29 CAR 1910.1020.

A) Fit testing:

Each Department shall establish a record of the qualitative and quantitative fit tests administered to an employee including:

- 1) The name or identification of the employee tested.
- 2) Type of fit test performed.
- 3) Specific make, model, style and size of the respirator tested.
- 4) Date of test.
- 5) The pass/fail results for QLFT or the fit factor and strip chart recording or other recording of the test results for QNFT.
- 6) Fit test records shall be retained for respirator users until the next fit test is administered.

Addendums apply to the Respiratory Protection Program

Attachment 1

Appendix A to Sec. 1910.134 Fit Testing Procedure (Mandatory)

Part I. OSHA-Accepted Fit Test Protocol

A. Fit Testing procedures - General Requirements:

The employer shall conduct fit testing using the following procedures. The requirements in this appendix apply to all OSHA accepted fit testing methods, both QLFT and QNFT.

- 1) The test subject shall be allowed to pick the most acceptable respirator from a sufficient number of respirator models and sizes so that the respirator is acceptable to and correctly fits the user.
- 2) Prior to the selection process, the test subject shall be shown how to don a respirator, position it on the face, proper strap tension and how to determine a proper fit. A mirror shall be available to assist the user in evaluating the fit and positioning the respirator. This does not constitute formal training in respirator use, it is only a review.

- 3) The test subject shall be informed that he/she is being asked to select the respirator that provides the most acceptable fit. Each respirator represents a different size and shape and if fitted and used properly, will provide adequate protection.
- 4) The test subject will be instructed to hold each chosen face piece up to the face and eliminate those that obviously do not give an acceptable fit.
- 5) The more acceptable face pieces are noted in case the one selected proves unacceptable. The most comfortable is donned and worn for at least five minutes to assess comfort. Assistance in assessing comfort can be given by discussing the points in Item A-6. If the employee is not familiar with using a particular respirator, the employee shall be directed to don the mask several times and to adjust the straps each time to become adept at setting proper tension on the straps.
- 6) Assessment of comfort shall include a review of the following points with the employee and allowing him/her adequate time to determine the comfort of the respirator:
 - a) Position of the mask on the nose
 - b) Room for eye protection
 - c) Room to talk
 - d) Position of mask on face and cheeks
- 7) The following criteria shall be used to help determine the adequacy of the respirator fit:
 - a) Chin properly placed
 - b) Adequate strap tension, not overly tight
 - c) Fit across nose bridge
 - d) Respirator of proper size to span distance from nose to chin
 - e) Tendency of respirator to slip
 - f) Self-observation in mirror to evaluate fit and respirator position

- 8) The employee shall conduct a user seal check, either positive or negative check, as described in this procedure or those recommended by the manufacturer. Before conducting the seal check, the employee shall be told to seat the mask on the face by moving the head side-to-side and up and down slowly while taking a few deep breaths. Another face piece shall be selected and retested if the employee fails the user seal test check.

- 9) The test shall not be conducted if there is any hair growth between the skin and the face piece sealing surface, such as stubble beard growth, beard, mustache, or sideburns which interfere with the respirator sealing surface. Any type of apparel that interferes with a satisfactory fit shall be altered or removed.

- 10) If an employee exhibits difficulty in breathing during the test, they shall be referred to a PLHCP to determine whether or not the employee can wear a respirator while performing his/her duties.

- 11) If the employee finds the fit of the respirator unacceptable, the employee shall be given the opportunity to select a different respirator and be retested.

- 12) Exercise regiment. Prior to the commencement of the fit test, the employee shall be given a description of the fit test and the employees responsibilities during the test fit. They shall also be informed of the exercise program to be performed during the test. The employee shall wear the respirator for at least five minutes prior to the start of the test.

- 13) The fit test shall be performed while the employee is wearing any applicable safety equipment that may be worn during actual respirator use which could interfere with the respirator fit.

- 14) Test Exercises:
 - a) The following test exercises are to be performed for all test fitting methods prescribed in this procedure, except the CNP method. The employee shall perform exercises, in the test environment, in the following manner:
 - 1) Normal breathing, without talking.
 - 2) Deep breathing, slowly and deeply, using caution not to hyperventilate.

- 3) Turning head side-to-side. The employee should hold the head at each extreme momentarily so the employee can inhale at each side.
- 4) Moving the head up and down. The employee shall be instructed to inhale when the head is in the up position.
- 5) Talking. The employee shall be instructed to talk slowly and loud enough to be heard clearly by the tester. The employee can read from a prepared text, such as the Rainbow Passage, count backwards from 100, or recite a poem or song.

RAINBOW PASSAGE:

When the sunlight strikes raindrops in the air, they act like a prism and form a rainbow. The rainbow is a division of white light into many beautiful colors. These take the shape of a long, round arch, with its path high above, and its two ends apparently beyond the horizon. There is, according to legend, a boiling pot of gold at one end. People look, but no one ever finds it. When a man looks for something beyond reach, his friends say he is looking for the pot of gold at the end of the rainbow.

- 6) Grimace. The employee shall grimace by smiling or frowning. This applies to the QNFT only and not performed during the QLFT.
- 7) Bending over. The employee shall bend forward at the waist as if to touch their toes. Jogging in place may be used if the test equipment prevents bending.
- 8) Each exercise shall be performed for one minute except the grimace which shall last for 15 seconds. The employee shall be questioned by the tester regarding the comfort of the respirator upon completion of the test. If the respirator is unacceptable or the test fails, another respirator shall be selected and the employee retested. The respirator shall not be adjusted during the test. Any adjustment voids the test and the test must be started over.

B. Qualitative Fit Test (QLFT):

- 2) Isoamyl Acetate Protocol

Note: This protocol is not appropriate to use for test fitting of particulate respirators. If used to fit test particulate respirators, they must be equipped with an organic vapor filter.

a) Odor Threshold Screening:

Odor threshold screening, performed without wearing a respirator, is intended to determine if the employee can detect the odor of Isoamyl acetate at low levels.

- 1) Three one liter glass jars with metal lids are required.
- 2) Odor-free water at approximately 77 deg. F. shall be used for the solution.
- 3) The Isoamyl acetate (IAA) stock solution is prepared by adding 1 ml of pure IAA to 800 ml of odor free water in a one liter jar, closing the lid and shaking for 30 seconds. A new solution shall be prepared at least weekly.
- 4) The screening test shall be completed in a room separate from the room used for fit testing. The two rooms shall be ventilated to prevent the odor of IAA from becoming evident in the general room air where testing takes place.
- 5) The odor test solution is prepared in a second jar by placing 0.4 ml of the stock solution into 500 ml of odor free water using a clean dropper or pipette. The solution shall be shaken for 30 seconds and allowed to stand for two to three minutes so that the IAA concentration above the liquid may reach equilibrium. This solution shall be used for one day only.
- 6) A test blank shall be prepared in a third jar by adding 500 cc of odor free water.
- 7) The odor test and test blank jars shall be labeled for jar identification. Labels shall be placed on the lids so that they may be pulled off periodically and switched to maintain the integrity of the test.
- 8) The following instructions shall be typed on a card and placed on the table in front of the two test jars: "The purpose of this test is to determine if you can smell banana oil at a low-concentration. The two bottles in front of you contain water. One of these bottles also contains a small amount of banana oil. Be sure the covers are on tight , then shake each bottle for two seconds. Unscrew the lid of each bottle, one at a time, and sniff at the mouth of the bottle. Indicate to the test conductor which bottle contains the banana oil."
- 9) If the employee is unable to correctly identify the jar containing the odor test solution, the IAA qualitative fit test shall not be performed.
- 10) If the employee correctly identifies the jar containing The odor test solution, the employee may proceed to respirator selection and fit testing.

3. Isoamyl Acetate Fit Test:

- 1) The test chamber shall be a 55-gallon drum liner suspended inverted

- over a 2 foot diameter frame so that the top of the chamber is about 6 inches above the employees head. A test chamber prepared by a manufacturer may be used also.
- 2) Each respirator used for the fitting and fit testing shall be equipped with an organic vapor cartridge or offer protection against organic vapors.
 - 3) After selecting, donning and properly adjusting a respirator, the employee shall wear it to the fit testing room. The room shall be separate from the room used for odor threshold screening and respirator selection and shall be well ventilated to prevent general room contamination.
 - 4) A copy of the test exercises and any prepared text from which the employee is to read shall be taped to the inside of the test chamber.
 - 5) Upon entering the test chamber, the employee shall be given a 6 by 5 inch piece of paper towel, or other porous, absorbent, single-ply material, folded in half and wetted with 0.75 ml of pure IAA. The employee shall hang the wet towel on the hook at the top of the chamber. An IAA test swab or ampule may be substituted for the IAA wetted towel provided it has been demonstrated that the alternative IAA source will generate an IAA test atmosphere with a concentration equivalent to that generated by the paper towel method.
 - 6) Allow two minutes for the IAA test concentration to stabilize before starting the fit test exercises. This would be an appropriate time to talk to the employee: to explain the fit test, the importance of his/her cooperation and the purpose of the test exercises.
 - 7) If at any time during the test the employee detects the banana like odor, the test is failed. The employee shall quickly exit from the test chamber and leave the test area to avoid olfactory fatigue.
 - 8) If the test is failed, the employee shall return to the selection room and remove the respirator. The employee shall repeat the sensitivity test, select and don another respirator and return to the test fit area and begin the test again. The process continues until a respirator that fits well has been found. Should the odor sensitivity test be failed, the employee shall wait at least 5 minutes before retesting. Odor sensitivity will usually returned by then.
 - 9) If the employee passes the test, the efficiency of the test procedure shall be demonstrated by having the employee break the respirator face seal and take a breath before exiting the chamber.
 - 10) When the employee leaves the chamber, the employee shall remove the saturated towel and return it to the person conducting the test, so that there is no significant IAA concentration build-up in the chamber during subsequent test. The used towels shall be kept in sealed plastic bags to keep the test area from being contaminated.

4. Saccharin Solution Aerosol protocol:

The entire screening and testing procedure shall be explained to the employee prior to conducting the screening test.

- a) Taste threshold screening. The saccharin taste threshold screening, performed without wearing a respirator, is intended to determine whether the employee being tested can detect the taste of saccharin.
- 1) During threshold screening, as well as during fit testing, employees shall wear an enclosure about the head and shoulders that is approximately 12 inches in diameter by 14 inches tall with at least the front portion clear and that allows free movement of the head when a respirator is worn. An enclosure substantially similar to the 3M hood assembly, parts FT 14 and FT15 combined, is adequate.
 - 2) The test enclosure shall have a 3/4-inch hole in front of the employee's nose and mouth area to accommodate the nebulizer nozzle.
 - 3) The employee shall don the test enclosure. Throughout the threshold screening test, the employee shall breath through his/her slightly opened mouth with tongue extended. The employee is instructed to indicate when he/she detects a sweet taste.
 - 4) Using a Devilbiss Model 40 Inhalation Medication Nebulizer or equivalent, the test conductor shall spray the threshold check solution into the enclosure. The nozzle is directed away from the nose and mouth of the employee. The nebulizer shall be clearly marked to distinguish from the fit test solution nebulizer.
 - 5) The threshold check solution is prepared by dissolving 0.83 grams of sodium saccharin U.S.P. in 100 ml of warm water. It can be prepared by putting 1 ml of the fit test solution into 100 ml of distilled water.
 - 6) To produce the aerosol, the nebulizer bulb is firmly squeezed so that it collapses completely, then released and allowed to fully expand.
 - 7) Ten squeezes are repeated rapidly and then the employee is asked whether the saccharin can be tasted. If the employee reports tasting the sweet taste, the screening test is completed. The taste threshold is reported as 10 regardless of the number of squeezes actually completed.
 - 8) If the first response is negative, ten more squeezes are repeated rapidly and the employee is asked again whether the saccharin is tasted. If the employee reports tasting the sweet taste during the second ten squeezes, the screening test is completed. The taste threshold is reported as twenty regardless of the number of squeezes actually completed.
 - 9) If the second response is negative, ten more rapid squeezes may be used. If the saccharin is not tasted after 30 squeezes, the employee is unable to taste saccharin and may not perform the saccharin test.
 - 10) The test conductor shall take note of the number of squeezes required to solicit a taste response.

- 11) Correct use of the nebulizer means approximately 1 ml of liquid is used at a time in the nebulizer body.
- 12) The nebulizer shall be thoroughly rinsed in water, shaken dry and refilled at least each morning and afternoon or at least every four hours.

Note: If the employee eats or drinks something sweet before the the screening test, he/she may be unable to taste the weak saccharin solution.

5. Saccharin Solution Aerosol Fir Test Procedure:

- 1) The employee shall not eat, drink (except plain)
- 2) The fit test uses the same enclosure described in 3.a above.
- 3) The employee shall don the enclosure while wearing the respirator.
- 4) A second nebulizer is used to spray the test fit solution into the enclosure. This nebulizer should be clearly marked to distinguish it from the screening test solution nebulizer.
- 5) The test solution is prepared as in 3.a.5 above.
- 6) As before, the employee is to breath through a slightly opened mouth with tongue extended.
- 7) The nebulizer is inserted into the enclosure as before and the same number of squeezes are utilized.
- 8) After generating the aerosol, the employee shall be instructed to begin the exercise routine.
- 9) Every 30 seconds the aerosol concentration shall be replenished using one half the original number of squeezes used initially.
- 10) The employee shall indicate to the test conductor if at any time during the fit test the taste of saccharin is detected. If the taste of saccharin is not detected, then the test is passed.
- 11) If the taste of saccharin is detected, the fit is deemed as failing. A different respirator shall be tried and the entire test repeated.
- 12) Since the nebulizer has a tendency to clog during the test, the test conductor must make periodic checks of the nebulizer to ensure that it is not clogged. If clogging is found at the end of the test, the test shall be considered invalid.

6. Bitrex (Denatonium Benzoate) Solution Aerosol QLFT Protocol:

The Bitrex Tm solution aerosol QLFT protocol uses the published saccharin test protocol because that protocol is widely accepted. Bitrex is routinely used as a taste aversion agent in household liquids which children should not be drinking and is endorsed by the AMA, the National Safety Council and the

American Assoc. of Poison Control Centers. The entire screening and testing procedure shall be explained to the employee prior to the conduct of the screening test.

- 1) The test check solution is prepared by adding 13.5 milligrams of Bitrex to 100 ml of 5% salt (NaCl) solution to distilled water.
- 2) The fit test solution is prepared by adding 337.5 mg of Bitrex to 200 ml of a 5% salt (NaCl) solution in warm water.

7. Irritant Smoke (Stannic Chloride) Protocol:

This Qualitative fit test uses a person's response to the irritating chemicals released in the "smoke" produced by a stannic chloride ventilation smoke tube to detect leakage into the respirator.

a) General Requirements and Precautions:

- 1) The respirator to be tested shall be equipped with high efficiency particulate air (HEPA) or P100 series filter(s).
- 2) Only stannic chloride smoke tubes shall be used for this protocol.
- 3) No form of test enclosure or hood for the employee shall be used.
- 4) The smoke can be irritating to the eyes, lungs and nasal passages. The test conductor shall take precautions to minimize the employees exposure to the irritating smoke. Sensitivity varies and certain individuals may respond to a greater degree to the irritating smoke. Care should be taken when performing the sensitivity screening checks to determine whether the employee can detect the irritant smoke using the minimum amount of smoke necessary to elicit a response.
- 5) The test fit shall be performed in an area with adequate ventilation to prevent exposure to the person conducting the fit test or the build-up of irritate smoke in the general atmosphere.

b) Sensitivity Screening Check:

The person to be tested must demonstrate his or her ability to detect a weak concentration of the irritant smoke.

- 1) The test operator shall break both ends of a ventilation smoke tube containing stannic chloride and attach one end to a low flow air pump set at 200 millimeters per minute or an aspirator squeeze tube. The test operator shall cover the other end of the smoke with a short piece of tubing to prevent potential injury from the jagged edge of the smoke tube.
- 2) The test operator shall advise the employee that the smoke can be irritating to the eyes, lungs and nasal passages and to keep his/her eyes closed during the test.
- 3) The employee shall be allowed to smell a weak concentration of the

irritant smoke before the respirator is donned to become familiar with its irritating properties and to determine if he/she can detect the irritating properties of the smoke. The test operator shall carefully direct a small amount of the irritant smoke in the employees direction to determine that he/she can detect it.

8. Irritant Smoke Fit Test Procedure:

- 1) The person being fit tested shall don the respirator without assistance and perform the required user seal check(s).
- 2) The employee shall be instructed to keep his/her eyes closed.
- 3) The test operator shall direct the stream of irritant smoke from the smoke tube toward the face seal area of the employee using the low flow pump or the squeeze bulb. The test operator shall begin at least 12 inches from the face piece and move the smoke stream around the whole perimeter of the mask. The operator shall gradually make two more passes around the perimeter of the mask, moving to within 6 inches of the respirator.
- 4) If the employee has not had an involuntary response and/or detected the irritant smoke, proceed with the test exercises.
- 5) The exercises shall be performed by the employee while the respirator seal is continually challenged by the smoke directed around the perimeter at a distance of 6 inches.
- 6) If the employee reports detecting the irritant smoke at any time, the test is failed. The employee must repeat the entire procedure if retesting is done.
- 7) Each employee passing the irritant smoke test without evidence of a response shall be given a second sensitivity screening check with the smoke from the same smoke tube used during the test, with respirator removed, to determine whether he/she still reacts to the smoke. Failure to evoke a response shall void the fit test.
- 8) If a response is produced during this second sensitivity check, then the test is passed.

C. Quantitative Fit Test (QNFT) Protocol:

The following quantitative fit testing procedures have been demonstrated to be acceptable: Quantitative fit testing using non-hazardous test aerosol generated in a test chamber and employing instrumentation to quantify the fit of the respirator; Quantitative fit testing using ambient aerosol as the test agent and appropriate instrumentation to quantify the respirator fit; Quantitative fit testing using controlled negative pressure and appropriate instrumentation to measure the volumetric leak rate of a face piece to quantify the respirator fit.

- 1) General:
 - a) The employer shall ensure that person(s) administering the QNFT are able to calibrate equipment and perform tests properly, recognize invalid test calculate fit factors properly and ensure the

test equipment is in proper working order.

- b) The employer shall ensure that the QNFT equipment is kept clean, maintained and calibrated according to the manufacturer's instructions so to operate at the parameters for which it was designed.

2) Generated Aerosol QNFT Protocol

a) Apparatus:

- 1) Instrumentation. Aerosol generation, dilution and measurement systems using particulate as test aerosol shall be used for QNFT.
- 2) Test chamber. The test chamber shall be large enough to permit all employees to perform all exercises without disturbing the test agent concentration or the measurement apparatus. The test chamber shall be constructed and equipped so that the test agent is effectively isolated from the ambient air, yet uniform in concentration throughout the chamber.
- 3) When testing air-purifying respirators, the normal filter or cartridge shall be replaced with a high efficiency particulate air (HEPA) or P100 series filter supplied by the same manufacturer.
- 4) The sampling instrument shall be selected so that a computer record or strip chart record may be made of the test showing the rise and fall of the test agent concentration with each inspiration and expiration at fit factors of at least 2000. Integrators or computers that integrate the amount of test agent penetration leakage into the respirator for each exercise may be used provided a record of the readings is made.
- 5) The combination of substitute air-purifying elements, test agent and test agent concentration shall be such that the employee is not exposed in excess of an established exposure limit of the test agent at any time during the test process, based upon the length of the exposure and the exposure limit duration.
- 6) The sampling port of the test specimen respirator shall be placed and constructed so that no leakage occurs around the port, a free air flow is allowed into the sampling at all times and there is no interference with the fit or performance of the respirator. The in-probe shall be designed and used so that the air sample is drawn from the breathing zone of the employee, midway between the nose and mouth and with the probe extending into the face piece cavity at least 1/4 inch.
- 7) The test setup shall permit the test conductor to observe the employee inside the chamber during the test.
- 8) The equipment generating the test atmosphere shall maintain the concentration of the test agent constant to within 10% variation for the duration of the test.

- 9) The time lag shall be kept to a minimum. There shall be a clear association between the occurrence of the event and its being recorded.
 - 10) The sampling line tubing for the test chamber atmosphere and for the respirator sampling port shall be of equal diameter and of the same material. The length of the two lines shall be equal.
 - 11) The exhaust flow from the test chamber shall pass through an appropriate filter before release.
 - 12) When sodium chloride aerosol is used, the relative humidity inside the test chamber shall not exceed 50%.
 - 13) The limitations of instrument detection shall be taken into account when determining the fit factor.
 - 14) Test respirators shall be maintained in proper working order and be inspected regularly for deficiencies such as cracks or missing valves and gaskets.
- b) Procedural Requirements:
- 1) When performing the initial user seal check using a positive or negative pressure check, the sampling line shall be crimped closed in order to avoid air pressure leakage during either pressure check.
 - 2) The use of abbreviated screening QLFT test is optional. Such a test may be utilized in order to quickly identify poor fitting respirators that passed the positive and/or negative pressure test and reduce the amount of QNFT time. The use of the CNC QNFT in the count mode is another optional method to obtain a quick estimate fit and eliminate poor fitting respirators before going on to perform a full QNFT.
 - 3) A reasonably stable test agent concentration shall be measured in the test chamber prior to testing. For canopy or shower curtain type of test units, the determination of the test agents stability may be established after the employee has entered the test environment.
 - 4) Immediately after the employee has entered the test chamber, the test agent concentration inside the respirator shall be measured to be sure the peak penetration does not exceed 5% of a half mask or 1% of a full face piece respirator.
 - 5) A stable test agent concentration shall be obtained prior to the actual start of testing.
 - 6) Respirator restraining straps shall not be over-tightened for testing. The straps shall be adjusted by the wearer without assistance from other persons to give a reasonably comfortable fit typical of normal use. The respirator shall not be readjusted once the test exercises begin.

- 7) The test shall be terminated whenever any single peak penetration exceeds 5% of half mask or 1% of full face piece respirators. The employee shall be refitted and retested.
- 8) Calculation of fit factors.
 - i) The fit factor shall be determined for the QNFT by taking the ratio of the average chamber concentration to the concentration measured inside the respirator for each test except the grimace exercise.
 - ii) The average test chamber concentration shall be as the arithmetic average of the concentration measured before and after each test or the arithmetic average measured before and after each exercise or the true average measured continuously during the respirator sample.
 - iii) The concentration of the challenge agent inside the respirator shall be determined by one of the following methods:
 - a) Average peak penetration method means the method of determining test agent penetration into the respirator utilizing a strip chart recorder, integrator or computer. The agent penetration is determined by an average of the peak heights on the graph or by computer integration, for each exercise except the grimace exercise. Integrators or computers that calculate the actual penetration into the respirator for each exercise will also be considered to meet the requirements of the average peak penetration method.
 - b) Maximum peak penetration method means the method of determining test agent penetration in the respirator as determined by strip chart recording of the test. The highest peak penetration for a given exercise is taken to be representative of average penetration into the respirator for that exercise.
 - c) Integration by calculation of the area under the individual peak for each exercise except the grimace exercise. This includes computerized integration.
 - d) The calculation of the overall fit factor using individual fit factors involves first converting the exercise fit factors to penetration values, determining the average and then converting the result back to a fit factor. This procedure is described in the following equation:

Overall fit factor

$$\frac{1}{\frac{1}{ff(1)} + \frac{1}{ff(2)} + \frac{1}{ff(3)} + \frac{1}{ff(4)} + \frac{1}{ff(5)} + \frac{1}{ff(6)} + \frac{1}{ff(7)} + \frac{1}{ff(8)}}$$
 Where ff1, ff2, ff3, etc. are the fit factors for exercises 1.2.3.etc.
- 9) The employee shall not be permitted to wear a half mask or quarter face piece respirator unless a minimum fit factor of 100

is obtained, or a full face piece respirator unless a fit factor of 500 is obtained.

- 10) Filters used for QNFT shall be replaced whenever increased breathing resistance is encountered or when the test agent has altered the integrity of the filter media.

3) Ambient Aerosol Condensation Nuclei Counter (CNC) QNFT Protocol:

The CNC QNFT protocol quantitatively fit test respirators with the use of a probe. The probed respirator is only used for QNFT. A probed respirator has a special sampling device, installed in the respirator, that allows the probe to sample air from inside the mask. A probed respirator is required for each make, model, style and size that the employer uses and can be obtained from the respirator manufacturer or distributor. The CNC instrument manufacturer also provides probe attachments that permits fit testing in an employee's own respirator. A minimum fit factor test level of at least 100 is necessary for a half mask respirator and a minimum fit factor test of at least 500 is required for a full face piece negative pressure respirator. The entire screening and testing procedure shall be explained to the employee prior to conducting the screening test.

A. Porta count Fit Test Procedure:

- 1) Check the respirator to make sure the respirator is fitted with a high-efficiency filter and that the sampling probe and line are properly attached to the respirator.
- 2) Instruct the person to be tested to don the respirator for at least 5 minutes before the test starts. This purges the ambient particles trapped inside the respirator and permits the wearer to make certain the respirator is comfortable. The employee shall have already been trained on how to wear the respirator properly.
- 3) Check the following conditions for the adequacy of the respirator fit: Chin properly placed, adequate strap tension, fit across nose bridge, tendency of the respirator to slip and self observation in a mirror to evaluate fit and respirator position.
- 4) Have the person wearing the respirator do a user seal check. If leakage is detected, determine the cause. If leakage is from a poor fitting face piece, try another size from the same model respirator or another model of respirator.
- 5) Follow the manufacturer's instructions for operating the Porta count and proceed with the test.
- 6) The employee shall be instructed to perform the exercises.
- 7) After the exercises, the employee shall be questioned by the test conductor regarding the comfort of the respirator upon completion of the protocol. If it has become unacceptable, another model of respirator shall be tried.

B. Porta count Test Instrument:

- 1) The Porta count will automatically stop and calculate the overall fit factor for the entire set of exercises. The overall fit factor is what counts. The pass or fail message will indicate whether or not the test was successful. If the test was a Pass, the fit test is over.
- 2) Since the pass/fail criterion of the Porta count is user programmable, the test operator shall ensure that the pass or fail criterion meet the requirements for minimum respirator performance in this Appendix.
- 3) A record of the test needs to be kept on file, assuming the fit test was successful. The record must contain the test subject's name, overall fit factor; make, model, style and size of respirator used; and date tested.

4. Controlled Negative Pressure (CNP) QNFT Protocol:

The CNP protocol provides an alternative to aerosol fit test methods. The CNP fit test method technology is based from exhausting air from a temporarily sealed respirator face piece to generate and then maintain a constant negative pressure inside the face piece. The rate of air exhaust is controlled so that a constant negative pressure is maintained in the respirator during the fit test. The level of pressure is selected to replicated the inspiratory pressure that causes leakage into the respirator under normal use conditions. Therefore, measurement of the exhaust stream that is required to hold the pressure in the temporarily sealed respirator constant yields a direct measure of leakage air flow into the respirator. The CNP fit test method measures leak rates through the face piece as a method of determining the face piece fit for negative pressure respirators. The CNP instrument manufacturer also provides attachments that replace the filter cartridges that permit fit testing of an employee's own respirator. To perform the test, the employee closes his or her mouth, and holds their breath after which an air pump removes air from the respirator face piece at a preselected constant pressure. The face-piece fit is expressed as the leak rate through the face piece, expressed as millimeter per minute. The quality and validity of the CNP fit tests are determined by the degree in which the in-mask pressure tracks the test pressure during the system measurement time of approximately 5 seconds. Instantaneous feedback in the form of real-time pressure trace of the in-mask pressure is provided and used to determine test validity and quality. A minimum fit factor pass level of 100 is necessary for a half-mask respirator and a minimum of at least 500 is required for a full face piece respirator. The entire screening and fit testing shall be explained to the employee prior to the conduct of the screening test.

a) CNP Fit Test Requirements:

- 1) The instrument shall have a non-adjustable test pressure of 15.0mm water pressure.
- 2) The CNP system defaults selected for test pressure shall be set at -1.5mm of water and modeled inspiratory flow rate shall be 53.8 liters per minute for performing fit tests.

NOTE: CNP systems have build-in capability to conduct fit testing that is specific to unique work rate, mask and gender situations that may apply to a specific workplace. Use of the system default valves which were selected to represent respirator wear with minimum cartridge resistance at a low-moderate work rate, will allow interest comparison of the respirator fit.

- 3) The individual who conducts the CNP fit testing shall be thoroughly trained to perform the test.
 - 4) The individual who conducts the CNP fit testing shall be thoroughly trained to perform the test.
 - 5) The employee shall be trained to hold his/her breath for at least 20 seconds.
 - 6) The employee shall don the test respirator without assistance.
 - 7) The employee shall don the test respirator without assistance.
- b) CNP Test Exercises:
- 1) Normal breathing. In a normal standing position, without talking, the employee shall breathe normally for 1 minute. After normal breathing exercises, the employee needs to hold their head straight ahead and hold their breath for 10 seconds during the test measurement.
 - 2) Deep breathing. In a normal standing position, the employee shall breath slowly and deeply for 1 minute, being careful not to hyperventilate. After the deep breathing exercise, the employee shall hold their head straight ahead and hold their breath for 10 seconds during the test measurement.
 - 3) Turning head side to side. Standing in place, the employee shall slowly turn their head from side to side between the extreme positions on each side for 1 minute. The head shall be held at each extreme momentarily so the employee can inhale at each side. After the turning head side to side exercise, the employee needs to hold head full left and hold their breath for 10 seconds during test measurements. Next, the employee needs to hold head full right and hold his/her breath for 10 seconds during test measurement.
 - 4) Moving head up and down. Standing in place, the employee shall move their head up and down for 1 minute. The employee shall be instructed to inhale in the up position. After the moving the head up and down exercise, the employee shall hold his/her head full up and hold their breath for 10 seconds during test measurements. Next, the employee shall hold their head full down and hold their breath for 10 seconds during test measurements.

- 5) Talking. The employee shall talk out loud slowly and loudly enough so as to be heard clearly by the test conductor. The employee can read from a prepared text such as the Rainbow Passage , count backwards from 100 or recite a poem or song for 1 minute. After the talking exercises, the employee shall hold their head straight ahead and hold their breath for 10 seconds during the test measurement.
 - 6) Grimace. The employee shall grimace by frowning or smiling for 15 seconds.
 - 7) Bending over. The employee shall bend at the waist as if touching his/her toes for 1 minute. Jogging in place shall be substituted for this exercise in such environments as shroud-type QNFT units that prohibit bending at the waist. After the bending over exercise, the employee shall hold his/her head straight ahead and hold their breath for 10 seconds during test measurements.
 - 8) Normal breathing. The employee shall don and doff the respirator within a 1 minute period. Then, in a normal standing position, without talking, the employee shall breathe normally for 1 minute. After the normal breathing exercise, the employee shall hold their head straight ahead and hold their breath for 10 seconds during the test measurement.
 - 9) After the test exercises, the employee shall be questioned by the test conductor regarding the comfort of the respirator upon completion of the protocol. If it has become unacceptable, another model of respirator shall be tried.
- c) CNP Test Instrument:
- 1) The test instrument shall have an effective audio warning device when the employee fails to hold their breath during the test. The test shall be terminated whenever the employee failed to hold their breath. The employee may be re-fitted and re-tested.
 - 2) A record of the test shall be kept on file, assuming the test was successful. The record must contain the employee's name, overall fit factor, make model style and size of respirator used and date tested.

Part II. New Fit Test Protocol:

- A) Any person may submit to OSHA an application for approval of a new fit test protocol. If the application meets the following criteria, OSHA will initiate a rulemaking proceeding under section 6(b)(7) of the OSH Act to determine whether to list the new protocol as an approved protocol in this Appendix A.
- B) The application must include a detailed description of the proposed new test protocol. This application must be supported by either:
 - 1) A test report prepared by an independent government research laboratory stating that the laboratory has tested the protocol and has found it to be

accurate and reliable;

- 2) An article that has been published in a peer-review industrial hygiene journal describing the protocol and explaining how test data support the protocol's accuracy and reliability.
- C) If OSHA determines that additional information is required before the Agency commences a rulemaking proceeding under this section, OSHA will notify the applicant and afford the applicant the opportunity to submit the supplemental information. Initiation of a rulemaking proceeding will be deferred until OSHA has received and evaluated the supplemental information.

Attachment 2

Appendix B-1 to Sec. 1910-134: User Seal Check Procedures (Mandatory)

The individual who uses a tight-fitting respirator is to perform a user seal check to ensure that an adequate seal is achieved each time the respirator is put on. Either the negative or positive pressure checks listed in this appendix or the respirator's manufacturer's recommended user seal check method shall be used. User seal checks are not substitutes for qualitative or quantitative fit test.

- I. Face piece Positive and Negative Pressure Checks:
 - A. Positive pressure check. Close off the exhalation valve and exhale gently into the Face piece. The face fit is considered satisfactory if a slight pressure can be built up inside the Face piece without any evidence of outward leakage of air at the seal. For most respirators, this method of leak testing requires the wearer to first remove the exhalation valve cover before closing off the exhalation valve and then carefully replacing it after the test.
 - B. Negative pressure test. Close off the inlet opening of the canister or cartridge(s) by covering with the palm of the hand(s) or by replacing the filter seal(s). Inhale gently so that the Face piece collapses slightly and hold the breath for 10 seconds. The design of the inlet openings of some cartridges can not be effectively covered with the palm of the hand. The test can be performed by covering the inlet opening of the cartridge with a thin latex or nitrile glove. If the Face piece remains in a slightly collapsed condition and no inward leakage of air is detected, the tightness of the respirator is considered satisfactory.

- II. Manufacturer's Recommended User Seal Check Procedure:

The manufacturer's recommended procedure for performing a user seal check may be used instead of the positive and/or negative pressure check procedures provided that the employer demonstrates that the manufacturer's procedures are equally effective.

Attachment 3

Appendix B-2 to Sec. 1910.134: Respirator Cleaning Procedures (Mandatory)

These procedures are provided for employer use when cleaning respirators. These are general in nature and the employer, as an alternative, may use the cleaning recommendations provided by the manufacturer of the respirators used by their employees, provided such procedures are as effective as those listed in Appendix B-2. Equivalent effectiveness simply means that the procedures used must ensure that the respirator is

properly cleaned and disinfected in a manner that prevents damage to the respirator and does not cause harm to the user.

- I. Procedures of Cleaning Respirators:
 - A. Remove filters, canisters or cartridges. Disassemble face pieces by removing speaker diaphragms, demand and pressure demand valve assemblies, hoses or any components recommended by the manufacturer. Discard, replace or repair any defective parts.
 - B. Wash components in warm water with a mild detergent or with a cleaner recommended by the manufacturer. A stiff bristle brush (not wire) may be used to facilitate the removal of dirt.
 - C. Rinse components thoroughly in clean, warm, preferably running water and drain.
 - D. When the cleaner does not contain a disinfecting agent, respirator components should be immersed for two minutes in one of the following:
 - 1) Hypochlorite solution made by adding approximately 1 ml of laundry bleach to 1 liter of warm water.
 - 2) Aqueous solution of iodine made by adding approximately 0.8 ml of tincture of iodine to 1 liter of warm water.
 - 3) Other commercially available cleansers of equivalent disinfectant quality when used as directed, if their use is recommended or approved by the respirator manufacturer.
 - E. Rinse components thoroughly in clear warm, preferably running water and drain. The importance of thorough rinsing can not be over-emphasized. Detergents or disinfectants that dry on face pieces may result in dermatitis. In addition, some disinfectants may cause deterioration of rubber or corrosion of metal parts if not completely removed.
 - F. Components should be hand-dried with a clean, lint free cloth or air dried.
 - G. Reassemble face piece, replace filters, canisters or cartridges.
 - H. Test the respirator to ensure its components work properly.

Attachment 4

Appendix C to Sec. 1910.134: Medical Evaluation Questionnaire (Mandatory)

Attachment 5

Appendix D to Sec. 1910.134 (Non-Mandatory) Information for Employees Using Respirators When Not Required Under The Standard.

Respirators are an effective method of protection against designated hazards when properly selected and worn. Respirator use is encouraged, even when exposures are below the exposure limit, to provide an additional level of comfort and protection for workers. However, if a respirator is used improperly or not kept clean, the respirator itself can become a hazard to the worker. Sometimes workers may wear respirators to avoid exposures to hazards, even

if the amount of hazardous substance does not exceed the limits set by OSHA standards. If your employer provides respirators for your voluntary use, or if you provide your own respirator, you need to take certain precautions to be sure that the respirator itself does not present a hazard.

You should do the following:

- 1) Read and heed all instructions provided by the manufacturer on use, maintenance, cleaning and care and all warnings regarding the respirator limitations.
- 2) Choose respirators certified for use to protect against the contaminant of concern. A label or statement of certification should appear on the respirator or respirator packaging. It will tell you what the respirator is designed for and how much it will protect you.
- 3) Do not wear your respirator into atmospheres containing contaminants which your respirator is not designed to protect against.
- 4) Keep track of your respirator to prevent using someone else's respirator.

V - Hazard Communication Program

This program has been established to meet the requirements of the Hazard Communication Standard of North Carolina. The purpose of this program and standard is to ensure that employees are made aware of the hazards of chemicals found in their work environment. This information is to be transmitted by means of a written hazard communication program, container labeling and other forms of warning, material safety data sheets, and employee education and training programs. A copy of this written program will be available in each department for review by any interested employee.

A survey has been conducted to identify all known hazardous chemicals used by County employees. A list of these chemicals and the department in which they are used, as well as copies of the material safety data sheets for each, will be maintained in each department where those chemicals are found. The list of hazardous chemicals and material safety data sheets will also be retained in the County's Safety Officer's office.

Material Safety Data Sheets (MSDS)

The purchasing agent of each department will be responsible for obtaining and maintaining the MSDS's on each hazardous chemical in use within their department. This individual will review incoming data sheets for new and significant health/safety information. He/she will see that any new information is passed on to the affected employees. They shall also be responsible for providing a copy of any and all MSDS's to the County Safety Officer.

MSDS's will be available to all employees in their work area for review during each work shift. If MSDS's are not available or new chemicals in use do not have MSDS's, immediately contact the purchasing agent within your department or the County Safety Officer.

Container Labeling

The purchasing agent will verify that all containers received for use are:

1. Clearly labeled as to their content;
2. Note the appropriate hazard warning; and
3. Listing the name and address of the manufacturer.

The purchasing agent in each department will ensure that all secondary containers are labeled with either an extra copy of the manufacturer's label or a generic label noting chemical identity and appropriate hazard warnings. For help with labeling in-facility containers, please contact the Safety Officer.

Stationary process containers will use signs, placards, or other written materials in place of labels as long as the chemical content is identified and appropriate hazard noted. In these cases, copies of the original label or MSDS will be immediately available to employees throughout the work shift, either by being posted or maintained in the work area.

The Safety Officer will review the County's labeling system annually and update as needed.

Employee Training and Education

The Safety Officer is responsible for the employee training program. He/she will ensure that all elements specified below are carried out.

Each new employee will receive information and training on the following:

1. An overview of the requirements contained in the Hazard Communication Standard.
2. Chemicals present in their workplace operation.
3. Physical and health effects of the hazardous chemical.
4. Location and availability of our written hazard program.
5. Methods and observation techniques used to determine the presence or release of hazardous chemicals in the work area.
6. How to lessen or prevent exposure to these hazardous chemicals through usage of control/work practices, personal protective equipment, and good personal hygiene practices.
7. Steps the County has taken to lessen or prevent exposure to these chemicals.
8. Emergency procedures to follow if they are exposed to these chemicals or if there is a chemical spill.
9. How to read labels and review MSDS's to obtain appropriate hazard information.
10. Location of MSDS file and location of hazardous chemical list.

After attending the training class, each employee will sign a form to verify that they attended the training, received our written materials, and understood the County's policies on hazard communication.

Prior to new chemical hazards being introduced into any department, each employee of that department will be given information as outlined above. The purchasing agent is responsible for ensuring that MSDS's on new chemicals are available.

Hazardous Non-Routine Task

Periodically, employees are required to perform hazardous non-routine tasks. Prior to starting work on such projects, each affected employee will be given information by their supervisor about the hazardous chemicals to which they may be exposed.

This information will include:

1. Specific chemical hazards.
2. Protective/safety measures the employee will take to prevent over exposures.
3. Measures the County has taken to lessen the hazards including ventilation, respirator, presences of another employee, and emergency procedures.

Unlabeled Pipes

Employees will be informed of the hazards of chemicals in unlabeled pipes in their work area. For employees in areas where chemicals in unlabeled pipes may pose a risk, employees will be

informed of procedures should a leak or rupture occur. The supervisor or department head should be contacted if questions arise regarding any unlabeled pipes within their work area.

Informing Contractors

It is the responsibility of the Department Head or their representative to provide contractors (with employees) the following information:

1. Hazardous chemicals to which they may be exposed while on the job site.
2. Precautions the employees may take to lessen the possibility of exposure by usage of appropriate protective equipment.
3. For protection against particulate, the following respirators shall be used:

The Department Head will also ensure that the contractors have provided the County with the same information:

1. Hazardous chemicals to which our employees may be exposed while the contractor is on the job.
2. Precautions our employees may take to lessen the possibility of exposure by usage of appropriate protective equipment.

The Department Head will also ensure that the contractors have provided the necessary training to their employees, and that employees understand the labeling systems used in the facility.

The Department Head will be responsible for contacting each contractor before work is started in the County to gather and disseminate any information concerning chemical hazards the contractor is bringing to our workplace.

The Department Head will be responsible for notifying each contractor regarding MSDS's for products which will be brought on site. Either copies will be made available or the MSDS's will be kept in a central location for the duration of time the contractor is on site.

VI - FIRE PREVENTION POLICY

Our fire prevention policy is designed to ensure that all reasonable steps are taken to preserve life and property from exposure to fire hazards. The requirements listed here identify the basic elements of our fire prevention program. They should be part of every department head and supervisor's day-to-day responsibilities.

This policy is not intended to deal with the complexities of fire prevention in building design, fire protection systems, high hazard exposure, compliance with legal ordinances, or the many technical details of fire prevention. It is meant to serve as an outline of the various aspects of our fire prevention program and as a helpful resource for department heads and supervisors who must carry out the program's specific procedures.

General Fire Prevention Rules

- 1) Identify the telephone number of the fire department and other emergency units which may be summoned.
- 2) Establish a warning system for fire or similar-type emergencies.
- 3) A quarterly self-inspection shall be conducted to identify and correct recognizable fire hazards.
- 4) Exit doors, approved hardware and locking devices, exit signs, passageways and means of emergency exit shall be inspected periodically to ensure their working condition and unobstructed access.
- 5) Fire drills shall be carried out in accordance with a yearly schedule.
- 6) Fire extinguishing equipment shall be predominantly displayed, labeled for usage and kept clear for easy access at all times.

VII - Electrical Safety-Related Work Practices Program

A. Purpose

This program implements the OSHA standard on electrical safety-related work practices that was 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.

B. Scope and Application

This document is applicable to all New Hanover County employees who are performing duties requiring the use of respiratory protection to prevent unnecessary exposure to airborne concentrations of toxic materials equal to or greater than the permissible limits established in existing Federal OSHA standards or criteria.

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 involves work preformed 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 water craft or automotive vehicles other than mobile homes and recreational vehicles.
 - c) Generation, Transmission and Distribution Installations: Installations for generation, control, transformation, transmission, and distribution of electrical energy located in buildings used for such purposes or located outdoors, including:
 - 1) Work performed directly on such installations, such as repairing overhead or underground distribution lines or repairing a feed water pump for the boiler in a generating plant.
 - 2) Work directly associated with such installations, such as line clearance tree trimming and replacing utility poles.

- 3) Work on electric utilization circuits in generating plants provided that (a) such circuits are commingled with installations of power generation equipment or circuits, and (b) the generation equipment or circuits present greater electrical hazards than those posed by the utilization equipment or circuit (such as exposures to higher voltages or lack of over current protection).
3. It should be noted that work on or associated with installation of utilization equipment used for other purposes than generating, transmitting, or distributing electrical energy (such as installation which are in office buildings, warehouses, garages, machine shops, or recreational buildings or other utilization installations which are not an integral part of a generating installation, substation, or control center) is covered under the paragraph above (premises wiring).

C. 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.

D. Electrical Work in General

Appropriate safety-related work practices should 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 should be consistent with the nature and extent of the associated electrical hazards.

E. Work On or Near Exposed De-energize Parts

1. Live parts to which an employee may be exposed should be De-energize before any employee works on or near them, unless de-energizing would introduce additional or increased hazards or is infeasible due to equipment design or operational limitations. See below for example.
 - a) Live parts that operate at less than 50 volts to ground need not be De-

energize if there will be no increased exposure to electrical burns or to explosion due to electric arcs.

- b) Examples of increased or additional hazards include interruptions or deactivation of emergency alarm systems, shutdown of hazardous location ventilation equipment, or removal of illumination for an area.
 - c) Examples of work that may be performed on or near energized circuit parts because of infeasibility due to equipment design or operational limitations include testing of electrical circuit that can only be performed with the circuit energized.
2. Whenever any employee is exposed to contact with parts of fixed electric equipment or circuits that have been De-energize, the circuits energizing the parts should be locked out, or tagged out, or both in accordance with the County's Lockout - Tagout Program as supplemented by the requirements of this program.
 3. Safe procedures for de-energizing circuits and equipment should be determined before circuits and equipment are De-energize.
 4. The circuits and equipment to be worked on should be disconnected from all electric energy sources. Control circuit devices, such as push buttons, selector switches and interlocks, should not be used as the sole means for de-energizing circuits or equipment. Interlocks for electrical equipment should not be used as a substitute for lockout and tagging procedures.
 5. Stored electric energy that might endanger personnel should be released. Capacitors should be discharged and high capacitance elements should be short circuited and grounded, if the stored electric energy might endanger personnel.
 6. If the capacitors or associated equipment are handled in meeting the foregoing rule, they should be treated as energized.
 7. Stored non-electrical energy in devices that could re-energize electric circuit parts should be blocked or relieved to the extent that the circuit parts could not be accidentally energized by the device.
 8. A lock and tag should 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. See rule 9 below.
 - b) A lock without a tag is permissible if all three of the following exist: (1) only one circuit or piece of equipment is energized, (2) the lockout period does not extend beyond the work shift, (3) employees exposed to the hazards associated with re-energizing the circuit or equipment are familiar with the procedure.
 9. Whenever a tag is used without a lock as permitted by rule 8a above, it should be supplemented by at least one additional safety measure that provides a level of safety equivalent to that obtained by the use of a lock. Examples of additional safety measures include the removal of an isolating circuit element, blocking of a controlling switch, or opening of an extra disconnecting device.

10. Each lock should 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 De-energized condition has been verified.
13. Verification of the De-energized condition should 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 backfeed 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 should 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 should be removed by the employee who applied it or under his/her direct supervision.
 - 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 circuits 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.

F. 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 should 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 should be capable of working on energized circuits and should 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 De-energized 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 should be permitted to install insulating devices on overhead power transmission or distribution lines.
10. Whenever a 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 - 10 ft. 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 both 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:

<u>Voltage Range</u> (Phase to Phase)	<u>Minimum Approach Distance</u>
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 15kV	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.

G. 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.

H. 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 should 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 to re-energized 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.

I. 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.

J. 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 basis, the electrical installation requirements contained in the OSHA standard regulating hazardous locations

should be observed.

K. Personal Protection Safeguards

1. Employees working in areas where there are potential electrical hazards should 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, 1910.137.
2. Protective equipment should be maintained in a safe, reliable condition and should 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 should be protected.
4. Employees should 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 should 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 should 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 should be protected.
7. Fuse handling equipment, insulated for circuit voltage, should be used to remove and install fuses when the fuse terminals are energized.
8. Ropes and handline used near energized parts should be nonconductive.
9. Protective shields, protective barriers, or insulating materials should 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 should be guarded to protect unqualified persons from contact with the live parts.
11. Alerting techniques should 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 should be used where necessary to warn employees about electrical hazards which might endanger them.
 - b) *Barricades.* Barricades should be used in conjunction with safety signs where it is necessary to prevent or limit employee access to work areas exposing employees to uninsulated 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 protection from electrical hazards, an attendant should be stationed to warn and protect employees.

L. 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 should, 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 should be determined by the risk likely to be encountered by the employee.

VIII - Standard Procedure for Vehicle Operation

1.0 Purpose:

The purpose of this procedure is to outline drivers license requirements, as well as vehicle safety rules and regulations in order to reduce preventable accidents, injuries, property damage and maintenance costs.

2.0 Organizations Affected:

All Departments/ Divisions

3.0 Reference:

County Standard Procedure: Drivers Record Standards for Applicants

County Standard Procedure: Drivers Record Standards for Current Employees

State Motor Vehicle Code

4.0 Policy:

- 4.1 A valid drivers license for the type and class of vehicle to be driven shall be required for all employees operating County vehicles, including heavy equipment on the highway, and employees operating privately owned vehicles on County business.
- 4.2 County employees shall comply with the Vehicle Safety Program rules and regulations outlined in this procedure while operating a County vehicle or driving a private vehicle on County business.
- 4.3 Effective April 1, 1992, employees working in certain job classifications may be required to have a Commercial Drivers License (CDL) to operate designated vehicles and/or equipment. Successful job applicants, which may include current employees that are promoted or re-assigned to positions requiring a CDL, shall comply with one of the following:
 - 4.3.1 Have a current CDL at time of employment, promotion or re-assignment, or
 - 4.3.2 Within 90 days of hiring, promotion or re-assignment, obtain a CDL as a condition of continued employment.

5.0 Non-Commercial Drivers License Requirements:

- 5.1 Class A licenses shall be required of Emergency Equipment Operators, operating a vehicle with a gross vehicle weight rating (GVWR) or licensed weight of 26,001 pounds or more.
- 5.2 Class C license shall be required of all other employees operating any single vehicle with a GVWR or licensed weight of less than 26,000 pounds or any such towing a vehicle with a GVWR not in excess of 10,000 pounds. This includes operating a vehicle designed to carry less than 16 passengers including the driver.

6.0 Commercial Drivers License Requirements:

- 6.1 A CDL shall be required for employees operating vehicles and equipment in the following classes:
 - 6.1.1 Class A - Any combination of vehicle with a gross vehicle weight rating (GVWR) or licensed weight of 26,001 pounds or more, provided the GVWR of the vehicle or vehicles being towed is in excess of 10,000 pounds.
 - 6.1.2 Class B - Any single vehicle with a GVWR or licensed weight of 26,001 or more and any such vehicle towing a vehicle not in excess of 10,000 pounds.
 - 6.1.3 Class C - Any single vehicle with a GVWR or licensed weight of less than 26,001 pounds or any vehicle towing a vehicle with a GVWR not in excess of 10,000 pounds comprising:
 - 6.1.3.1 Vehicles designed to transport 16 or more passengers including the driver.
 - 6.1.3.2 Vehicles used in the transportation of hazardous materials that require the vehicle to be placarded.
- 6.2 In addition to the required class of CDL, certain endorsements may be required and include the following:
 - 6.2.1 Endorsement P - Authorizes driving a vehicle carrying passenger specified in Paragraph 6.1.3.1.
 - 6.2.2 Endorsement H - Authorizes driving a vehicle transporting hazardous material.
 - 6.2.3 Endorsement N - Authorizes driving tanker vehicles.
 - 6.2.4 Endorsement X - Represents a combination of hazardous materials and tanker vehicles.

7.0 Vehicle Safety Program Rules and Regulations:

- 7.1 All employees driving County vehicle or personal vehicles on County business shall drive in a courteous manner observing the following vehicle safety program rules and regulations:
 - 7.1.1 Employees shall remain knowledgeable of and comply with all Federal, State and County motor vehicle laws and regulations.
 - 7.1.2 Employees shall practice effective defensive driving techniques. Employees shall exercise special precautions when children, joggers or pedestrians are in the roadway, driving during inclement weather or when negotiating around heavy equipment.
 - 7.1.3 The driver and all occupants shall wear seat belts as required by law.
 - 7.1.4 No person other than employees or appropriate persons engaged in business with the County and approved by the department head or designee shall ride in a County vehicle.
 - 7.1.5 No employee shall operate a County vehicle or personal vehicle on County business after having consumed alcohol and/or drugs, including prescription

and over-the-counter drugs which impair their ability to safely operate a vehicle.

- 7.1.6 County vehicles shall be used for work related duties only.
- 7.1.7 Vehicles not in good mechanical condition shall not be driven. Report all mechanical problems to your supervisor immediately.
- 7.1.8 Unsecured items shall not be placed on the dash of a County vehicle.
- 7.1.9 Low beam headlights shall be turned on during daylight hours if the windshield wipers are in operation.
- 7.1.10 Vehicles shall not be left unattended while the engine is running. If it is necessary to leave the vehicle running while it is unattended, the transmission shall be placed in Park and the parking brake activated. If the vehicle is on an incline or decline, the wheels shall be chocked.
- 7.1.11 When possible, drivers shall position their vehicles to eliminate the need for backing. If backing is the only alternative, the driver shall survey the area on both sides, above and behind the vehicle prior to backing. When an employee (spotter) is available, the employee will assist the driver in backing a vehicle. The driver shall instruct the spotter on the hand signals that will be used. The spotter will remain in full view of the driver during the backing maneuver.
- 7.1.12 Ladders, pipes and tools carried outside the closed compartment of vehicles shall be placed in the brackets or carriers provided. Tools, equipment and materials carried in the truck bed shall be secured by using side rails and tailgate.
- 7.1.13 Cargo transported on trailers shall have at least one tie down for each 10 feet of cargo.
- 7.1.14 Ear phones shall not be worn while operating a County vehicle. Personal battery powered portable radios or cassette players are permitted in the cab of vehicles when they are secured in a manner that does not create operational and/or safety hazards.
- 7.1.15 CDL drivers shall perform a pre-trip inspection at the beginning of each day's use. An after trip inspection shall be completed by the driver. If conditions are identified that indicate the vehicle is unsafe to operate, the driver shall report such conditions to his/her supervisor immediately. If problems are found, the vehicle shall not be operated until repairs are made and the vehicle is safe to operate.
- 7.1.16 All County vehicles, when parked during non-working hours, will have:
 - 1) The ignition key removed
 - 2) The parking brake set
 - 3) All passenger and compartment doors locked
 - 4) Wheels chocked, if applicable

All motor vehicle collisions involving County vehicle or personal vehicles used during County business shall reported to your supervisor immediately.

Driving Record Standard for Applicants

1.0 Purpose:

To establish minimum driving record standards which successful applicants must meet for all job classifications requiring a valid drivers license.

2.0 Organizations Affected:

All Departments/Divisions

3.0 Policy:

- 3.1 This policy applies to all applicants including employees applying for positions requiring a valid drivers license as a condition of employment.

Applicants must have in their possession a valid North Carolina drivers license or obtain a North Carolina license within 30 days after hiring as a condition of employment. A review of the driving history of each selected applicant will be conducted by the Safety Officer prior to hiring.

Applicant driving records with convictions listed in section 3.2 will be disqualified.

- 3.2 Applicants will not be selected for positions requiring a valid drivers license if their driving record contains any of the following:
- 3.2.1 Conviction of driving while impaired (DWI) within the last five (5) years.
 - 3.2.2 Conviction for death by vehicle, hit and run, racing, careless and reckless or other major offenses within the last three (3) years.
 - 3.2.3 Conviction of more than two (2) ordinary traffic violations or more than two (2) chargeable accidents within the past 12 month period.
 - 3.2.4 Suspension or revocation of driving license within the last five (5) years.
 - 3.2.5 When an applicants overall driving history reveals a pattern of convictions of traffic offenses and the applicants capacity to safely operate a County vehicle or heavy equipment is questionable, the Safety Officer shall reserve the right to approve or disapprove the applicant based on their overall driving record and the position for which the applicant has applied. Results of review and rationale for disapproval will be provided to the hiring supervisor by the Safety Officer.

4.0 Procedure for Applicants:

- 4.1 The hiring department shall notify the Safety Officer when an applicant has been recommended for a position requiring a valid drivers license by means of a completed "Drivers License Record Check" form. The Safety Officer shall request a copy of the applicants drivers history from the Sheriff's Department for review. The Safety Officer will notify the hiring department of the outcome of the check.

- 4.2 All employee hiring shall be conducted in accordance with this procedure. Any employee hired not in accordance with this procedure for which the driving history does not meet the minimum requirements set forth in this procedure shall be terminated or re-assigned to an available position which does not require a valid drivers license.

DRIVING RECORD STANDARDS FOR CURRENT EMPLOYEES

1.0 PURPOSE:

To establish minimum driving standards which must be met for all classifications requiring a valid drivers license. Departments may elect to enforce more stringent driving record requirements.

2.0 ORGANIZATIONS AFFECTED:

All Departments/Divisions

3.0 POLICY:

- 3.1 Effective July 1, 1996, all employees who operate County vehicles, including heavy equipment operated on the roadways and all employees assigned to positions requiring valid drivers licenses, must comply with section 3.3 of this policy.
- 3.2 Effective with the adoption of this policy and continuing thereafter, the Safety Officer will periodically check the driving record of randomly selected employees holding positions for which valid drivers license are required.

When an employee's overall driving record reveals a pattern of convictions for traffic offenses and the employees capacity to safely operate a County vehicle or heavy piece of equipment

is questionable, the Safety Officer shall reserve the right to approve or disapprove the continued operation of a County vehicle or heavy piece of equipment by the employee based on their overall driving record, following consultation with the Department Head and the Director of Human Resources. Results of review and rationale for disapproval will be provided to the employee's supervisor by the Safety Officer.

- 3.3 Employees will not be permitted to operate County vehicles or heavy equipment if their driving record contains any of the following:
- 3.3.1 Conviction of driving while impaired (DWI) for which their driving privileges have been suspended or revoked.
- 3.3.2 Conviction of death by vehicle, hit and run, racing, careless and reckless or other major offenses for which their driving privileges have been suspended or revoked.
- 3.3.3 Conviction of two (2) ordinary traffic violations, or two chargeable accidents within the past 12 months period, or the conviction of three (3) ordinary traffic violations, or three (3) chargeable accidents within the past 36 months period.
- 3.3.4 Suspension or revocation of their driving privileges within the past five (5) years.

4.0 Penalty Provisions:

- 4.1 Any employee in a position requiring a valid drivers license is subject to disciplinary action up to and including dismissal for violations in accordance with Standard Procedures. Any employee who has their State Drivers License suspended or revoked shall not operate a County vehicle and shall immediately report such suspension or revocation to their Supervisor.
- 4.2 Driving while Impaired provision:
 - 4.2.1 Any employee convicted of a DWI prior to the effective date of this policy and whose license has been reinstated (case cleared) may continue to operate a County vehicle on a probationary basis within their currently assigned license classification.
 - 4.2.2 Effective August 1, 2006, employees who have had their drivers' licenses suspended or revoked for any reason will not be allowed to operate a County vehicle or a privately owned vehicle on County business. This restriction shall include all employees issued a Limited Driving Privilege by the state.

5.0 PROCEDURES FOR REPORTING CHARGES AND CONVICTIONS:

- 5.1 All County employees shall report any charge and or conviction of a motor vehicle violation and any charge and or conviction for DWI to their Supervisor immediately. This action shall occur on the first working day following the charge and or conviction. The Supervisor shall report each DWI charge and conviction to the Safety Officer within three (3) work days. Failure to comply with this provision shall be considered a willful violation and may result in disciplinary action up to and including termination.

IX. Bloodborne Pathogen Program

Covered Employees:

The below listed employees are to be covered by the provisions of the Bloodborne Pathogen Policy. The employees shall receive training, be given the option of receiving the HBV vaccine at no cost and other policy related information pertaining to this policy.

- A) Health Department
- B) Sheriff's Office
- C) Social Services
- D) Parks Department
- E) Property Management
- F) Vehicle Management
- G) Engineering Water/Sewer
- H) Environmental Management
- I) Juvenile Day Treatment Center

It should be noted that not all employees within these departments will fall under this policy. Administration, supervision and/or clerical support may not be covered.

New Hanover County has made every effort to provide coverage to employees who are, or may have the potential to be, exposed to Bloodborne Pathogens.

Exposure Determination:

- A) Category 1**
 - Health Department employees
 - Sheriff Department employees
- A) Category 2**
 - Engineering Water/Sewer employees
 - Environmental Department employees
 - Parks Department employees
- B) Category 3**
 - All other departments covered by this policy

1.0 Policy:

- 1.1 This policy is designed to assist New Hanover County (NHC) employees eliminate or minimize exposure to Bloodborne Pathogens (BP) or other potentially infectious materials. The degree of risk of acquiring BP on the job is directly related to the frequency of potential exposure to blood. Non-intact skin, eye and mucous membrane exposure to blood poses a lower risk and exposure to other potentially infectious body material, still a lower risk.
- 1.2 The policy outlines steps to proven occupational exposure and specific procedures to be followed if an inadvertent percutaneous or permucosal exposure occurs.
- 1.3 The policies and procedures shall be reviewed and updated at least annually and whenever necessary to reflect new job descriptions and modified tasks and procedures that affect occupational exposure.

2.0 Employees Affected:

- 2.1 All full-time and temporary employees who have occupational exposure to BP are covered by this policy and its standard operating procedures.
- 2.2 NHC contract employees are required to have a current HBV immunization to perform jobs involving exposure to BP. NHC DOES NOT provide the initial HBV vaccine to contract employees. With this exception, all other aspects of this policy and its standard operating procedures apply to contract, part-time employees and volunteers.

3.0 Definitions:

- 3.1 Bloodborne Pathogens: Pathogenic micro-organisms that are present in human blood and can cause diseases in humans. These pathogens include, but are not limited to, Hepatitis B Virus (HBV) and Human Immunodeficiency Virus (HIV).
- 3.2 Other Potentially Infectious Materials: Includes the following human body fluids: Semen, vaginal secretions, cerebrospinal fluids, pleural fluids, synovial fluids, pericardial fluids, peritoneal fluid, amniotic fluid, saliva in dental procedures and any fluid that is visibly contaminated with blood.
- 3.3 Occupational Exposure: Actual or potential parenteral, skin, eye or mucous membrane contact with blood or other potentially infectious material that may result from the performance of an employee's duties.
- 3.4 Universal Blood and Body Fluid Precautions: An approach to infection control. According to the concept of universal precautions, all human blood, body components including serum, other body fluids containing visible blood, semen, vaginal secretions, tissues, and cerebrospinal, synovial, pleural, peritoneal, pericardiac and amniotic fluids are treated as if they are infectious for HBV, HIV and other BP.

4.0 Standard Operating Procedures:

- 4.1 New Hanover County has developed written exposure determinations and maintains a list of all job classifications in which employees have occupational exposure to BP. All job tasks and procedures are classified into one of three categories to facilitate determinations.
 - A. Exposure Determination Include:

1. Category 1: Tasks that involve potential for mucous or skin contact with blood, body fluids or tissues, or potential for spills or splashes of them.
 2. Category 2: Tasks that involve no exposure to the above but may require performing unplanned Category 1 tasks.
 3. Category 3: Tasks that involve no exposure and Category 1 tasks are not a condition of employment.
- 4.2 NHC establishes, maintains and enforces work practices and standard operating procedures to eliminate or minimize contact with blood or other potentially infectious materials.
- A. NHC employees are required to follow standard operating procedures while performing job duties classified as Category 1 and 2.
- 4.3 NHC uses modifications to work environments and changes in work practices and procedures as a primary method to eliminate or minimize employee exposure.
- 4.4 All NHC employees who have occupational exposure to BP are required to have HBV vaccines. The vaccine is provided to the employee at no cost. The first dose of vaccine is to be made available within ten working days of the initial job assignment. Employees who decline the Hepatitis B vaccine are required to sign a Declination form and have the option of taking the vaccine at a later date without cost.
- 4.5 NHC offers initial, pre-placement, annual and new or modified procedure training to all employees who perform Category 1 and 2 tasks.

At a minimum, the training includes:

1. Access to and explanation of the BP standard
 2. Information about BP diseases and their transmission
 3. The County's exposure control plan
 4. Job classifications
 5. Information about HBV
 6. Decontamination and disposal procedures
 7. Universal blood and body fluid precautions
 8. Protective equipment
 9. Information and protocols for reporting and treatment of possible exposures
- 4.6 NHC has implemented a written cleaning procedure and the method of decontamination based upon the location within or outside the facility, type of surface to be cleaned, type of soil present and tasks or procedures being performed in the area.
- A) Employees are required to clean equipment, environmental and work surfaces and decontaminate them immediately after contact with blood or other body

fluids.

- 4.7 As defined by OSHA, contaminated laundry means laundry that is soiled with blood or body fluids.
- A. When handling contaminated laundry, employees are to practice universal precautions, including wearing gloves. Contaminated laundry is to be handled as little as possible, with minimum agitation.
 - B. Contaminated laundry must be placed in red plastic bags or biohazard-labeled leak-proof containers wherever it is generated. It is not to be sorted or raised at the location where it is used.
 - C. Although contaminated laundry must be handled more carefully and stored in labeled or red bags, it can be washed with the regular laundry.
- 4.8 New Hanover County has established and maintains a record-keeping system that consist of:
- A. A confidential medical record for each employee who performs Category I and II tasks, and
 - B. Training records including content, faculty and attendance.

5.0 PROCEDURES FOR EXPOSURE TO BLOODBORNE PATHOGENS

When an inadvertent percutaneous or permucosal exposure to blood or other potentially infectious materials occurs:

5.1 EMPLOYEES ARE REQUIRED TO:

- A. Remove contaminated personal protective equipment and place it in a red or biohazard labeled bag.
- B. Wash exposed areas (hands and other skin surfaces) with soap and water. Immediately flush exposed mucous membranes with water, and, if exposed, flush eyes with large amounts of water or eye wash solution.
- C. Immediately report exposure incident to your supervisor. If exposure occurs after 5 P.M. or on weekend or holiday, report exposure as soon as possible.
- D. If there is a spill, immediately arrange for decontamination with an approved cleaning solution.
- E. Seek medical care if first aid is needed or if signs or infection, such as redness or swelling occurs.
- F. Obtain an Incident Report form from the supervisor. Complete and return it to the supervisor within 24 hours.

When an employee reports an inadvertent percutaneous or permucosal exposure to blood or other potentially infectious materials:

5.2 SUPERVISORS ARE REQUIRED TO:

- A. Immediately arrange an exposure follow-up.
- B. Review standard operating procedures and methods to prevent future exposures with the employee.

- C. Provide employee with the Incident Report form.

When an employee or supervisor reports an inadvertent percutaneous or permucosal exposure to blood or other potentially infectious materials:

5.3 NEW HANOVER COUNTY'S CORPORATE HEALTH PROVIDER IS REQUIRED TO:

- A. Access the employee's exposure, his/her Hepatitis B vaccination and vaccine response status, whether the source of the blood is available, and the source's HIV and HBsAG status. This is done by interviewing the employee, reviewing the completed accident report form, the employee's confidential medical record and the source's record; contacting the source's physician and talking with other employees, as indicated.
- B. Individualize post-exposure management and treatment of exposed employee(s) on a case by case basis, following current communicable disease rules.
- C. Conduct HIV and HBV pre-test counseling prior to obtaining laboratory tests from the exposed employee. Obtain consent for confidential HIV testing from the employee.
 - 1. If the employee consents to a baseline blood specimen collection, but does not give consent at that time for HIV serologic testing, the serum sample must be stored by freezing at - 20⁰c for 90 days (if long, - 70 ⁰c). If within 90 days of the exposure incident, the employee elects to have the baseline sample tested, such testing shall be done as soon as possible.
- D. Conduct post-exposure counseling on return of laboratory results. All employees will receive their laboratory results.

If the source person is HIV or HBV infected, employee counseling should include:

- 1. Refraining from sexual intercourse unless condoms are used,
 - 2. Not sharing needles or syringes,
 - 3. Not donating or selling blood, and
 - 4. Not breast-feeding
- E. Provide prophylactic treatment or immunizations as ordered by the physician and as required by the communicable disease rules [15A NCAC .0203 (b)(3)(b) and (c)].
 - 1. When indicated, administer Prophylactic Zidovudine and HBIG as soon as possible after exposure, since Zidovudine's value beyond 48-72 hours, and HBIG's value beyond 7 days is unclear.
 - F. If the source person is HIV-positive or is unknown, conduct follow-up HIV testing and counseling for the exposed employee at 3 and 6 months.
 - G. File completed Incident Report Form with New Hanover County's Department of Human Resources.

- H. File completed Incident Report Form with New Hanover County's Department of Human Resources.

STANDARD OPERATING PROCEDURES FOR PROTECTION AGAINST OCCUPATIONAL EXPOSURE TO BLOODBORNE PATHOGENS

I. PURPOSE

Bloodborne Pathogens are a major occupational health hazard in the health care industry. Engineering controls, work practice administrative controls, and personal protective equipment must be used to eliminate or minimize exposure to Bloodborne Pathogens or other potentially infectious materials.

II. EVALUATION OF THE WORKPLACE

The workplace must be evaluated to determine the actual or potential hazards, including biological hazards (HIV, HBV and Bloodborne Pathogens). All job-related tasks are classified into three categories according to potential for contact with blood or other potentially infectious materials.

III. WORK PRACTICES TO BE FOLLOWED (CATEGORIES I AND II)

- A. All employees must follow universal blood fluid precautions, as described by CDC. All body fluids/ material must be treated as if known to be infectious for HIV, HBV, or other Bloodborne Pathogens.
- B. Aseptic procedures must be used to obtain fluids for diagnostic or therapeutic purposes.
- C. Personal protective equipment must be used to prevent exposure to blood or other potentially infectious materials. It should not permit blood or other Bloodborne Pathogens to pass through to or reach the employees work clothes, street clothes, under garments, skin, eyes, mouth or other mucuous membrane under normal conditions of use and for the duration of time which the protective equipment will be used.
 - 1. Uniforms or lab coats must be worn in clinical work areas.
 - 2. Gloves (disposable) must be worn when handling all specimens of blood or other body fluids. A glove which has been used for handling infectious materials should not be used for handling equipment, opening doors, answering phones, or handling reports.
 - A. Gloves must be changed between each patient contact. Immediately after use, gloves are to be discarded in appropriate trash containers.
 - 3. Gloves, masks, lab coats, and protective eyewear must be worn if mucous membrane contact with blood or other potentially infectious materials (which includes splashing, spraying, spattering, and generation of droplets of these substances) is possible.
- D. Hands must be thoroughly washed with soap after removing gloves and immediately after contact with blood or other potentially infectious materials.
- E. All sharps (e.g., needles, slides, lancets, scalpels, etc.) must be place in a nearby puncture-proof, labeled container. Contaminated needles and other contaminated

sharps must be bent, recapped, or removed before disposal.

NOTE: Special circumstances may require recapping needles. In such cases, protective recapping shields must be used to prevent unintentional needlesticks.

- F. Eating, drinking, smoking, applying cosmetics or lip balm, and handling contact lenses are prohibited in clinical work areas.
- G. Food and drinks must not be kept in refrigerators, freezers, shelves, cabinets, counters, or benchtops where blood or other potentially infectious materials are present.
- H. Employees with exudative lesions or weeping dermatitis should refrain from all direct patient care, and handling patient care equipment until the condition resolves.
- I. All procedures involving blood or other potentially infectious materials must be performed in such a manner to minimize splashing, spraying, spattering, and generation of droplets of these substances.
- J. Uniforms, lab coats, other fabric items, or nondisposable clothing that become blood-soaked are to be immediately removed and handled as contaminated laundry.
- K. Broken glassware that may be contaminated must be picked up directly by hand. It should be cleaned up by mechanical means such as dust pan and brush, tongs, or forceps.
- L. All employees are responsible for maintaining a clean and sanitary worksite at all times.
- M. Heavy utility gloves may be worn during routine, noncontaminated cleaning procedures. These gloves may be decontaminated for re-use with a 1:10 to a 1:100 dilution of bleach as long as the integrity of the glove is not compromised.

To view or print the **HEPATITIS B VACCINE DECLINATION FORM**, click [here](#).

Bloodborne Pathogen Lesson Plan

A: OSHA Standard

The Occupational Safety and Health Administration (OSHA) standard is 1910.1030. This standard is directed at hospitals, clinics, law enforcement, and other businesses where workers have an exposure to blood and other body fluids which may be infectious. It also deals with other material which may be contaminated with infectious fluids.

B: HBV and HIV

The two types of bloodborne pathogens you are most likely to be exposed to are:

1. Hepatitis B virus (HBV)
2. Human immunodeficiency virus (HIV)

HBV is an inflammation of the liver that is transmitted by blood and other body fluids. It can

result in severe liver damage, cirrhosis of the liver, and death. There is a vaccine available for HBV, which is about 90% effective. The County offers the vaccine to employees, who have the potential exposure to blood or other body fluids, at no cost. It is a three shot series and is given by the Health Dept..

HIV attacks the body's immune system and leads to acquired immune deficiency syndrome or AIDS. AIDS is always fatal. There is no vaccine to guard against HIV at this time.

C: Exposure Incidents

Most workplace exposures occur from contact with contaminated blood. This may be from an injured coworker or a member of the general public. You can be infected if your skin is punctured by pieces of blood-strained glass, metal or other sharp object. The key to preventing contamination is to protect yourself from exposure.

D: PPE's

If you must assist an injured person, put on protective gloves, eyewear, and other personal protective equipment as necessary. Non-absorbent gloves such as latex or nitrile work best to protect you. Wear gloves if there is any chance of coming into contact with blood or other body fluids. Wear face protection if there is a chance of being splattered in the face with blood.

E: Clean Up

Continue to wear PPE's while cleaning up the area after treating an injured person. Place all towels, gauze, pads and blood covered items into specially labeled biohazard disposal bags. Clean all potentially contaminated areas with chlorine bleach or other suitable EPA-registered disinfectant.

When clean up is complete, place gloves and other PPE's in the marked bag also. Clothing should be removed and cleaned with warm soapy water as soon as possible. Bleach may be needed while cleaning clothes or disposal of clothes may be necessary.

Wash hands thoroughly after removing gloves with a non-abrasive soap and running water.

F: PostExposure

If exposure has occurred, inform your supervisor immediately. He or she will help you arrange a confidential medical evaluation and any treatment which may be necessary. Exams and treatment is covered under Workers' Compensation so it is required that a form 19 be completed for each exposure.