

# ***Kent County***

## ***DEPARTMENT OF AERONAUTICS***

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# ***Kent County***

## **DEPARTMENT OF AERONAUTICS**

### **HAZARD COMMUNICATION/RIGHT-TO-KNOW PROGRAM**

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#### **1 PURPOSE**

Kent County is committed to providing and maintaining a safe and healthful work environment for all employees. Therefore, Kent County Department of Aeronautics has established the following ***Hazard Communication/Right-To-Know Program*** in accordance with the Occupational Safety and Health Administration's (OSHA) Hazard Communication Standards, 29 CFR 1910.1200 and 1926.59 as adopted by the Michigan Department of Consumer and Industry Services (MDCIS) (formerly MIOSHA), Part 80 and the Kent County Safety and Health Program. This program establishes procedures for:

- Handling, controlling and archiving health and safety information and documentation related to potentially hazardous chemicals used;
- Identifying chemical products and their associated hazards;
- Informing all employees in the proper use and handling of chemicals and products containing chemicals; and
- Developing protocols for employees who are required to perform hazardous non-routine tasks.

#### **2 DEFINITIONS**

**Chemical Material or Hazardous Chemical Product** - any chemical product used occupationally by employees. This includes chemical materials or hazardous chemical products that Kent County employees may come into contact with while performing routine and non-routine tasks.

**M.S.D.S.** – Material Safety Data Sheet: An occupational gathering and recording form used to provide product information such as ingredients, known health effects, disposal requirements, fire hazards, toxic degradation products, physical properties, safe handling advice, and recommended personal protective equipment.

#### **3 HAZARD DETERMINATION**

Kent County relies on Material Safety Data Sheets provided by chemical suppliers for chemical product hazard determinations.

## 4 LABELING

### 4.1 *Storage Containers*

Every Supervisor is responsible to ensure that all chemical storage containers are labeled with:

- Chemical name (including gas cylinders, gasoline cans, kerosene, etc.);
- Hazard warning; and
- Name and address of manufacturer, or importer, or distributor, or other responsible party.

All employees are responsible for reporting unlabeled containers or containers with labels that do not identify the contents, hazards of the contents and appropriate safety precautions.

No employee may remove a label or deface a label from any container unless he/she immediately affixes a new label to the container. Empty containers will remain labeled until thoroughly cleaned (e.g. rinsed three times). Accidentally defaced labels should be replaced or reported to the supervisor immediately.

### 4.2 *Shipping Containers*

It is Kent County's policy that all suppliers of chemical products will ship their products in appropriately labeled containers as required by the USDOT Hazardous Materials Transportation Act.

### 4.3 *Portable Containers*

If chemical products are transferred to a separate or portable container not for immediate use, the employee performing the transfer will assure that the new container, as well as any secondary container, is properly labeled.

### 4.4 *Piping*

Pipe systems under pressure (greater than 40 psi) are considered containers and shall be painted with the appropriate color code or labeled at every inlet and outlet.

<b>Contents</b>	<b>Vessel Color</b>
Air	Green
Condensate	Yellow
Fire Protection Systems	Red
Natural Gas	Yellow
Heating Primary	Orange (stripe)

Labels used on pipes and other containers will at least identify the contents; it's hazards, arrow of direction, and precautions.

## 5 MATERIAL SAFETY DATA SHEETS

A Material Safety Data Sheet must accompany all chemical products received by Kent County Department of Aeronautics before being used at the Gerald R. Ford International Airport (“Airport”). This includes materials brought in by outside contractors for use on-site. In the event the MSDS has not been received, Purchasing is to be notified to obtain the appropriate MSDS.

Every employee that receives a MSDS from a vendor will forward it to his or her Supervisor. The Supervisor will then review the MSDS.

When new or amended MSDS are received by Purchasing, an announcement will be sent to the Department Director. An announcement will be posted

MSDS information is maintained in a three ring binder in various locations throughout the. This file is available for review:

- Upon request from an employee at any time during their work shift;
- Upon request by a government agency such as OSHA/MDCIS in the course of an inspection in which hazardous chemical products used in a specific area, or work site, might come under reasonable question;
- Upon request by a Physician, Hospital, or Emergency Health Care Professional who is treating an employee with a suspected occupational exposure; and/or
- When safety training is provided for employees.

The MSDS system/file is organized to include:

- A current master inventory list of all MSDSs and/or chemical information sheets. The list is indexed alphabetically by chemical or product;
- The chemical name or identity used on the MSDS; and
- The chemical and common name of all ingredients (considered hazardous components) determined to present a potential hazard.

The “Employee Right To Know” poster notifying the employees of the location of the MSDSs and any new or updated MSDS is posted within each Division.

Kent County requires that all personnel acquaint themselves with chemical products used in their work activities.

## 6 CONTRACTORS

### ***6.1 Contractor Notification***

Contractors who may come into contact with hazardous chemical products while at the Airport will be informed of such hazard(s) in writing by the person responsible for managing the project (project manager).

Information provided to contractor(s) will include potential health hazards, precautionary measures required to protect employees and the availability and location of product MSDSs.

## **6.2 Contractor Requirements**

Prior to providing services, all contractors who use hazardous chemical products are required to maintain copies of appropriate MSDS sheets at the project site. The project manager will inform all Kent County employees who may be affected by chemicals or products used by contractors.

Contractors are responsible to train their employees in accordance with the Hazard Communication Standard and this program.

## **7 HAZARDOUS NON-ROUTINE TASKS**

All work activities are routinely evaluated to identify potential physical and chemical hazards. If an activity is identified as “hazardous non-routine”, involving chemicals or products containing chemicals, a protocol to safely perform the task will be developed and implemented. The supervisor will ensure that initial and annual training for all personnel who are required to perform “hazardous non-routine tasks” is provided.

## **8 EMPLOYEE COMMUNICATION AND TRAINING**

### **8.1 Initial Training**

New employees are trained as part of their orientation program prior to beginning any work activities where chemicals or products/wastes/materials containing chemicals or chemical contamination are used, discovered, or stored.

### **8.2 Training Requirements**

Employees are trained to know and recognize:

- The requirements of the Hazard Communication (29 CFR 1910.1200) as well as the MDCIS Right-To-Know Act;
- Operations in their work area or work sites in which hazardous chemicals are used, discovered or stored;
- The location and availability of MSDS or other chemical information;
- The details of this Hazard Communication Program;
- Methods and observations which may be used to detect the presence or release of a hazardous chemical in the work area;
- The physical and health hazards of work area chemicals;
- Proper work practices and protective equipment required for protection from exposure when using hazardous chemicals;

- The hazard rating/labeling system and how to use MSDSs to obtain appropriate hazard information;
- A list of routinely used chemicals by each Division (for example, airport mechanics, field maintenance personnel, or ARFF personnel) which identifies the chemical name, types of hazard, route of exposure and required personal protection procedures. Results of any air sampling performed during specific work activities will be included, if available;
- Procedures to follow if an employee is inadvertently exposed to chemical materials;
- Chemical hazards of non-routine jobs; and
- General safety instructions on the handling, clean up, and disposal of hazardous chemicals.

### ***8.3 Recordkeeping***

All employees will be included in Right-To-Know training. An employee sign-in sheet documenting attendance will be maintained and is filed in the Human Resources Department and in the employee's on-site file.

An evaluation will be given to all employees at the conclusion of the training program. A discussion of the test and correct answers will follow the evaluation.

### ***8.4 Periodic Training***

Periodic training will occur when significant new hazards are introduced and employees are potentially exposed.

### ***8.5 Employee Rights***

Employees are informed that Kent County is prohibited from discharging, or discriminating against any employee who exercises their rights regarding information about hazardous chemicals.

Employees are also informed that, as an alternative to requesting a MSDS from Kent County, they may obtain a copy from MDCIS.

## **9 ADMINISTRATIVE RESPONSIBILITIES**

### ***9.1 Division Supervisor***

Each Division Supervisor is responsible to train all new, existing, and transferred employees on the use of hazardous chemical products in their work area and to maintain records of the training conducted.

In addition, each Division Supervisor (or a designee) is responsible for:

- Monitoring all chemical containers received for use;
- Assuring that all chemical storage containers are properly labeled;
- Evaluating chemical products prior to use;
- Maintaining a MSDS file for all products and raw materials being used;

- Updating the 3-ring MSDS binder with current MSDSs received from vendors;
- Periodically auditing chemical purchases to assure MSDSs are received with each purchase;
- Conducting, assuring, and organizing employee safety training as necessitated by information received through MSDS;
- Providing guidance on safe handling, use and disposal of hazardous materials;
- Investigating controls which may be necessary for the safe handling of certain chemical products;
- Assisting employees in the determination of potential hazards which may be involved in a task considered “non-routine”;
- Participate in training;
- Ensuring that this Hazard Communication Program is enforced; and
- Reviewing annually, and more often if necessary, this Hazard Communication Program.

## ***9.2 Project Managers***

A project manager is the person responsible for managing a vendor (outside contractor) contract. Therefore the Project Manager is responsible for:

- Providing other personnel and/or outside contractors with information documented in this program;
- Contacting each vendor before commencement of work activities to determine if and what chemical materials will be used or could be produced in their projects in order to determine the risk of exposure to Kent County employees working in or near the project site;
- Informing Kent County employees of potential chemical hazards which may be introduced by vendors; and
- Assuring that the Contractor maintains all necessary MSDS at the Contractor’s worksite.

## ***9.3 Employees***

Each employee is responsible to be aware of pertinent information on hazardous chemical products before starting work on routine or non-routine tasks and to wear the prescribed personal protective equipment each day. Employees are also responsible to:

- Report unlabeled containers or containers with labels that do not properly identify the contents and associated hazards and precautions,
- Forward a copy of a MSDS, upon receipt of a vendor, to their Supervisor,
- Participate in training.
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# ***Kent County***

## ***DEPARTMENT OF AERONAUTICS***

### ***PERSONAL PROTECTIVE EQUIPMENT PROGRAM***

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#### **1 PURPOSE**

It is well recognized that routine and non-routine work operations involve a risk of occupational exposure to hazards. While the Kent County Department of Aeronautics makes every effort to implement engineering and administrative exposure controls to reduce this risk, it is often necessary to supplement these controls by providing employees with personal protective equipment.

The purpose of this *Personal Protective Equipment Policy* is to:

- Provide employees personal protective equipment (PPE) appropriate for the occupational hazards encountered;
- Select appropriate personal protective equipment based on identified or potential occupational health and safety hazards;
- Prohibit the use of defective or damaged personal protective equipment, and
- Provide employee training in the proper use, care, and selection of personal protective equipment and the requirements of this policy.

The Department of Aeronautics provides this Personal Protective Equipment Program in accordance with OSHA 29 CFR 1910.132, 133, 135, 136, 138 and MDCIS - Department of Labor General Industry Safety Standard Part 433. Personal Protective Equipment.

#### **2 DEFINITIONS**

The following definitions of terms are provided to assist in the understanding and application of this Personal Protective Equipment Policy.

**Breakthrough Time** - The time elapsed from the initial contact of a hazardous liquid chemical with the outside surface of personal protective clothing material to the moment at which the chemical can be detected on the interior surface of the material (by means of a chosen analytical technique).

**Degradation** - A deleterious change in the chemical structure of a protective clothing material.

**Permeation** - The process by which a chemical moves through protective materials on a molecular level. Permeation involves: (i) sorption of chemical molecules into the outside surface (surface in contact) of a material; (ii) diffusion of sorbed molecules into the material; (iii) desorption of molecules from the opposite (inside) surface of the material.

### **3 HAZARD ASSESSMENT**

#### ***3.1 Procedure***

Because Department of Aeronautics employees work at various locations throughout the Gerald R. Ford International Airport, work tasks will be evaluated annually to identify and determine potential chemical and physical hazards, which may exist, and/or the status of health and safety exposure controls for those hazards. Consideration is given to the following basic hazard categories:

- Impact (front and lateral);
- Puncture, penetration;
- Compression;
- Chemical exposures (including dusts);
- Temperature extremes;
- Light radiation; and
- Electric shock.

During each evaluation the hazards are assessed and the findings documented.

#### ***3.2 Review***

A review of each assessment is conducted by an American Board of Industrial Hygiene (ABIH) Certified Industrial Hygienist (CIH) to determine or estimate the risk and seriousness for injury from each of the hazards identified.

#### ***3.3 Schedule***

##### **3.3.a Initial**

An initial assessment was performed in accordance with OSHA Regulation 29 CFR 1910.132 (d)(1), as amended July 5, 1994. The purpose of this assessment was to determine if occupational hazards are present, or are likely to be present, which would require the use of personal protective equipment on the job site. In the case of construction management activities/work tasks, each proposed work site will be evaluated to determine the need for additional PPE.

##### **3.3.b Periodic**

A periodic PPE assessment will be performed when:

- New equipment, procedures, or processes are proposed for implementation;

- A review of accident reports indicates the misuse of personal protective equipment; or
- The suitability of previously selected personal protective equipment is in question.

### **3.3.c Annual**

A personal protective equipment assessment for general or typical work or job locations/activities will be performed annually and the results will be documented.

## **3.4 *Verification***

In accordance with OSHA Regulation 29 CFR 1910.132 (d)(2), a written certification of the hazard(s) will be completed by the Department Director or a designated representative.

Completed certification of Hazard Assessments are on file with the Department.

## **4 SELECTION**

The Supervisor of each area (mechanics, field maintenance, and Fire Fighting/Emergency Response) will select the appropriate personal protective equipment for each hazard identified during the assessment. When selecting each piece of equipment, consideration will be given to the nature and degree of the hazard as well as flexibility, durability and comfort. When selecting personal protective equipment the following criteria are considered:

- The personal protective equipment must provide adequate protection against the particular hazard(s) for which it is designed;
- The personal protective equipment must be reasonably comfortable when worn for its intended function;
- The personal protective equipment must be durable;
- The personal protective equipment must be easily cleaned;
- The limitations of the personal protective equipment must be known;
- Any hazards which, the personal protective equipment may pose must be understood.

### **4.1 *Eye and Face Protection***

Eye protection is provided to all employees potentially exposed to eye or face hazards resulting from flying particles, liquid chemicals, acids or caustic liquids, chemical gases or vapors, glare, potentially injurious light radiation, electrical flash, or a combination of these hazards.

Protective eye and face devices purchased after July 5, 1994 comply with ANSI Z87.1-1989, "American National Standard Practice for Occupational and Educational Eye and Face Protection," or have been demonstrated equally effective.

Protective eye and face devices purchased before July 5, 1994 comply with the ANSI Z87.1-1968, "USA standard for Occupational and Educational Eye and Face Protection," or have been demonstrated equally effective.

#### ***4.2 Head Protection***

Protective head equipment is provided to all employees potentially exposed to hazards resulting from falling or flying objects or from other harmful contacts or exposures.

Protective helmets purchased after July 5, 1994 comply with ANSI Z89.1-1986, "American National Standard for Personal Protection - Protective Headwear for Industrial Workers - Requirements" or have been demonstrated equally effective.

Protective helmets purchased before July 5, 1994 comply with ANSI Z89.1-1969, "American National Standard Safety Requirements for Industrial Head Protection," or have been demonstrated equally effective.

#### ***4.3 Foot Protection***

Protective footwear is required for all employees working in areas where there is a danger of foot injuries due to falling and rolling objects, or objects piercing the sole, and where such employee's feet are exposed to electrical or chemical hazards.

Protective footwear purchased after July 5, 1994 comply with ANSI Z41-1991, "American National Standard for Personal Protection - Protective Footwear," or have been demonstrated equally effective.

Protective footwear purchased before July 5, 1994 comply with ANSI Z41.1-1967, "USA Standard for Men's Safety-Toe Footwear," or have been demonstrated equally effective.  
**SEE KENT COUNTY DEPARTMENT OF AERONAUTICS' SHOE POLICY.**

#### ***4.4 Hand (Skin) Protection***

Hand (skin) protection is required for all employees who are exposed to hazards resulting from skin absorption of or contact with harmful substances; severe cuts or lacerations; severe abrasions; punctures; chemical burns; thermal burns (including UV radiation from overexposure to sunlight); and/or temperature extremes.

The selection of appropriate protection is based on an evaluation of the performance characteristics of the protection relative to the task(s) to be performed, conditions present, duration of use, and hazards and potential hazards identified.

Cloth gloves shall not be worn when operating or near anyone operating rotating equipment such as a drill or a powered threading machine.

Precautions shall be taken with regard to synthetic clothing that is worn near a source of flame, spark, a hot surface, or material that could ignite the clothing.  
When working out-of-doors, employees shall wear shirts with sleeves.

No loose clothing, neckwear encircling the neck, or exposed jewelry, such as rings, and necklaces, near a machine having reciprocating or rotating shafts or spindles or when handling materials that could catch on clothing or jewelry and cause injury. If rings can't be removed, they must be taped. Lanyards, if used, must be the break-away type.

#### ***4.5 Hearing Protection***

When engineering and administrative controls cannot reduce employee's exposure to acceptable noise levels, hearing protectors will be provided at no cost to all employees exposed to sound/noise levels at or above the action level of 85 dBA. This hearing protection will attenuate employee exposures to less than the action level. Refer to the Kent County Department of Aeronautics' Hearing Conservation Program.

#### ***4.6 Body Protection***

Anyone working within the right-of-way of an active roadway is provided with and required to wear a reflectorized fluorescent warning garment (e.g. vest).

#### ***4.7 Fall Protection***

A full body harness and safety strap is provided and required to be used when an employee is working on elevated, unguarded surfaces. See the Department of Aeronautics' Fall Protection Policy.

## **5 PERSONAL PROTECTIVE EQUIPMENT USAGE**

### ***5.1 Eye and Face Protection***

#### **5.1.a Usage Requirements**

Employees are required to wear eye protection when exposed to hazards from flying debris (e.g., dust, particles), liquid chemicals, acid or caustic liquids, potential gases or vapors (well sampling or maintenance activities), or potentially injurious light radiation.

Specifically, Department of Aeronautics employees are required to wear safety glasses at all active construction sites where flying projectiles may be likely, and while using powered equipment and/or around any moving equipment.

#### **5.1.b Limitations**

When limitations or precautions are indicated by the manufacturer, they will be communicated by the Department Director or designated representative and strictly enforced.

#### **5.1.c Fit**

Safety glasses and goggles should fit over the eyes comfortably. The fit of protective eyewear will be observed by a fellow employee or the Site Supervisor.

#### **5.1.d Cleaning**

Safety glasses will not be shared by employees unless they are cleaned and disinfected. Safety glasses will be kept clean. Employees are instructed to clean their glasses with soap, water, and tissue on a regular basis.

Goggles will be disassembled and all parts thoroughly cleaned with soap and warm water. All traces of soap will be carefully rinsed. Both glasses and goggles must be dried with a clean, non-abrasive tissue. Defective parts will be replaced as needed.

#### **5.1.e Inspection**

Employees are instructed to inspect their safety glasses and goggles every day prior to use.

#### **5.1.f Storage**

Employees are instructed to store their safety glasses and goggles in a location free from dirt, dust, and moisture. It is unacceptable to store protective eyewear in an open work environment where damage can result from work activities, chemicals, or dirt.

#### **5.1.g Replacement**

Safety glasses that are damaged while being properly worn will be repaired or replaced at no cost to the employee.

Safety glasses will be replaced when vision is reduced from scratched, stained or pitted lenses.

Goggles will be replaced as needed due to normal wear. Headbands will be replaced when the goggles fit loosely.

#### **5.1.h Prescription Eye Protection**

Personnel using corrective spectacles and who are required by MDCIS to wear eye protection must wear face shields, goggles or spectacles of the following type:

- Spectacles with protective lenses providing optical correction;
- Goggles worn over corrective spectacles (or contacts) without disturbing the adjustment of the spectacles; or
- Goggles that incorporate corrective lenses mounted behind the protective lenses.
- Prescription lenses, including safety lenses which are mounted in dress frames do not comply with federal and state regulations. In such cases, if the job assignment requires eye protection, an approved goggle will be worn over the corrective glasses.

All prescription and non-prescription safety glasses will have plastic lenses unless the employee's prescription cannot be ground using plastic material.

#### **5.1.i Special Glasses**

Eye Protection with up to 10% tinted lenses may be worn for a short period of time upon the recommendation of an ophthalmologist or optometrist and prior approval of the

Department Director. In addition, safety glasses with UV shielding (e.g., sunglasses) may be worn out-of-doors.

## **5.2 *Hand and Skin Protection***

### **5.2.a Usage Requirements**

Employees are required to wear gloves/skin protection when exposed to sharp objects that could produce cuts and lacerations, chemicals that could irritate or burn the skin or be absorbed through the skin, and/or harmful temperature extremes.

### **5.2.b Selection**

Gloves/skin protection is selected according to the hazard or potential hazards and type of work activity.

Permeation and breakthrough test data are available from each manufacturer and will list specific rates and times for specific chemicals and types of material (nitrile, latex, rubber, neoprene PVC, etc.). Manufacturer's recommendations will serve as a relative guideline for properly selecting their products. Caution will be used when comparing different manufacturer data.

Each Supervisor will contact each manufacturer of PPE to determine any current data regarding their products before selecting a protective material for a specific job or task.

When evaluating gloves, the Supervisor will base selection according to the following criteria:

- Gloves/skin protection must be of good construction;
- Degradation and permeation guides must be available;
- Chemical substances which may pose an occupational hazard must be known;
- Work activities must be defined; and
- If hazards are unknown, gloves/skin protection must be worn in layers.

### **5.2.c Limitations**

When limitations or precautions are indicated by the manufacturer, they will be immediately communicated by the Supervisor and strictly enforced.

### **5.2.d Fit**

Gloves/skin protection should fit comfortably.

### **5.2.e Use**

Before use, gloves/skin protection should be inspected for both degradation and rips and tears. Prior to removal, gloves/skin protection should be washed and decontaminated.

### **5.2.f Replacement**

Gloves/skin protection will be replaced as needed due to normal wear, permeation, degradation and/or penetration by chemical materials.

### **5.3 Foot Protection**

Protective footwear is required of all employees who are in areas with hazards as defined in **Section 4.3**. See Kent County Department of Aeronautics' Shoe Policy.

### **5.4 Head Protection**

Protective headwear, as specified in **Section 4.2**, is provided for all employees working in the following areas:

- Designated hard hat construction areas;
- Vertical confined space entries;
- Any other area with overhead hazards (such as under a lift); and
- Working in close proximity to operating earth-moving equipment.

Department of Aeronautics employees are required to refrain from wearing hard hats that have been altered, painted, or otherwise damaged physically. A chin strap is provided with a hard hat for use in severe weather or other work operations where a hat could be displaced.

Department of Aeronautics employees are required to wear a hat, cap, or net where there may be a hazard of hair entanglement in moving machinery or equipment, or where there is exposure to means of ignition.

*These hair enclosures shall be designed to be reasonably comfortable to the wearer, shall completely enclose all loose hair, and shall be adjustable. Material used for a hair enclosure shall be fast-dyed and non-irritating to the skin when subject to perspiration.*

*A hair enclosure used in an area where there is a danger of ignition from heat, flame, or chemical reaction shall be made of materials that are flame-retardant.*

## **6 EMPLOYEE EDUCATION AND TRAINING**

### **6.1 Method and Content**

Education and training shall be provided for each employee required to wear and use personal protective equipment. The education and training program includes:

- Results of the most recent hazard assessment;
- Availability of personal protective equipment;
- Purpose of the personal protective equipment;

- Procedures for identifying/selecting the correct personal protective equipment for the assigned job;
- How to properly don, doff, adjust and use personal protective equipment;
- Limitations of the personal protective equipment;
- Proper care, inspection, cleaning, maintenance, storage, and disposal of personal protective equipment;
- Measures to take when personal protective equipment becomes defective; and
- Policy regarding employee owned personal protective equipment.

## **6.2 Employee Competency**

Employees will not be considered competent in personal protective equipment use until they are able to demonstrate competency in the following:

- Knowledge and understanding of this policy and SOP;
- Knowledge and understanding of the reasons for the provision and use of personal protective equipment for a particular job;
- Donning personal protective equipment;
- Doffing personal protective equipment; and
- Knowledge and understanding of the limitations associated with specific personal protective equipment.

Unless employees demonstrate an ability to use and select appropriate personal protective equipment, they will not be permitted by the Department of Aeronautics to perform work activities which require the use of personal protective equipment.

## **6.3 Schedule**

Education and training will be provided to employees according to the following schedule:

- When personal protective equipment is initially issued;
- Upon review of accident report(s) which necessitate training/retraining;
- When new work tasks or equipment necessitate an addition or change in personal protective equipment requirements/use;
- Within seven (7) working days after revisions have been incorporated into the policy,
- When the type of personal protective equipment changes; and
- When there is reason to believe that any affected employee who has already had training does not demonstrate an understanding or basic knowledge/competency of personal protective equipment.

## **7 EMPLOYEE OWNED PERSONAL PROTECTIVE EQUIPMENT**

Employees are prohibited from using employee-owned personal protective equipment.

## 8 CONTRACTORS

All outside contractors are required to adhere to this Personal Protective Equipment Policy while working on Kent County work sites . The contractor will be informed that this policy is available for their review at the time of bid solicitation and/or award of contract.

## 9 RECORDKEEPING

The Department of Aeronautics will maintain the following records pertinent to this Policy. These records include:

- Certification of Hazard Assessment forms;
- Employee Record of Training; and
- Manufacturer's information/manuals associated with personal protective equipment.

## 10 ADMINISTRATIVE RESPONSIBILITY

### ***10.1 Department Director***

The Department Director or designated representative is responsible for:

- Periodically evaluating and if necessary changing or updating this Personal Protective Equipment Policy;
- Verifying Hazard Assessments;

### ***10.2 Division Supervisor(s)***

The Division Supervisor is responsible for:

- Assessing the effectiveness of personal protective equipment;
- Selecting appropriate personal protective equipment for each job assignment;
- Providing employee training in the use and limitations of the personal protective equipment, as well as in the provisions of the Personal Protective Equipment Policy.
- Performing an initial Hazard Assessment for each job assignment,

### ***10.3 Project Manager(s)***

Project Manager is responsible for:

- Providing contractors with information documented in this policy; and
- Contacting each contractor before commencement of work activities to obtain necessary information regarding certification of their compliance and understanding with this policy.

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# ***Kent County***

## ***DEPARTMENT OF AERONAUTICS***

### ***PERSONAL PROTECTIVE EQUIPMENT CERTIFICATION***

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Dear Mr. James Koslosky:

At the request of Mr. Phil Van Dyke, Kent County, Risk Management, and with the assistance of Thomas Ecklund, Facilities Manager, Fred Fisher, Building Maintenance Supervisor, Eric Vander Stel, Field Maintenance Supervisor and Jake Callier, Fire Chief, ARFF, Kent County, an Environmental Health Resources, Inc., (EHR) Industrial Hygiene representative completed an initial evaluation in 2000 of the Department of Aeronautics. This evaluation was performed in accordance with the Occupational Safety and Health Administration (OSHA) standard, 29 CFR 1910.132, 133, 136, and 137, (PPE, Head, Hand, Face, Skin, Feet) and 29 CFR 1910.95 (Hearing Conservation) as adopted by the Michigan Department of Consumer and Industry Services (MDCIS), Part 433, as amended, and Occupational Health Rules 325.6101-60126, and appendices. Included in this evaluation was a review of the 2000 and 2001 (to date) injury and illness logs (OSHA form 200, MIOSHA form 200) and random interviews with employees at each site to discuss any near miss injuries which may not have been reported or logged.

The purpose of this evaluation was to assess the various work areas at the Gerald R. Ford International Airport including the grounds to determine if chemicals and physical hazards were present or were likely to be present which required the use of personal protective equipment. Consideration was given to the following basic hazard categories:

- Impact;
- Penetration/puncture, objects piercing the soles of the feet;
- Compression;
- Cold;
- Dust generation; and
- Light radiation.

Based on this evaluation, the following is proposed.

**1 REGARDING EYE AND FACE PROTECTION:**

<b>Work Function</b>	<b>Potential Hazard(s)</b>	<b>PPE Required</b>	<b>PPE Recommended and/or Available</b>
Operating mowing equipment	Flying projectiles, particulates	Safety Glasses (with UV protection as necessary)	Safety Goggles
Operating various powered grounds-keeping equipment (weed trimmers, chain saws, etc.)	Flying projectiles, Particulates	Safety Glasses with (UV protection as necessary)	Safety Goggles
Cutting concrete	Flying projectiles, Particulates	Safety Glasses (UV protection as necessary)	Safety Goggles
Working with tar kettle	Chemical burns/splash, irritation	Safety Glasses (UV protection as necessary)	Face shield and safety glasses underneath
Mixing and/or any use of chemicals	Chemical burns	Safety Goggles	Face shield with safety glasses underneath
Adding acid to batteries	Chemical burns	Safety Goggles	Face shield with safety glasses underneath
Jump starting batteries	Chemical burns	Face shield with safety glasses underneath	
Automotive Mechanic – repair activities	Flying particulates	Safety Glasses	Safety Goggles
Fueling vehicles and De-icing equipment	Chemical exposure, irritation	Safety Goggles	
Use of power equipment, (such as the grinder) working in shop (e.g. woodworking)	Flying projectiles, Particulates	Safety Glasses	Safety Goggles
Welding	Injurious light radiation/ burns	Welder’s Goggles	Welder’s Faceshield
Painting	Paint chips in the eye/Foreign Body	Safety Glasses	
Washing equipment using detergent	Chemical burns or irritation	Safety Glasses	

<b>Work Function</b>	<b>Potential Hazard(s)</b>	<b>PPE Required</b>	<b>PPE Recommended and/or Available</b>
Working in the right-of-way in an active roadway or near moving equipment	Flying projectiles, Particulates	Safety Glasses	
Sandblasting	Flying projectiles, particulates	Sandblaster's hood/shield	
Responding to medical emergencies	Exposure to potential bloodborne pathogens	Faceshield	
Fire-fighting	Burns/exposure	Full-face SCBA	
Police – simulation -shooting	Flying Projectiles	Shooter's Goggles	

Note: Any use of compressed air requires the use of goggles.

## 2 REGARDING HAND, SKIN, & BODY PROTECTION:

<b>Work Function</b>	<b>Potential Hazard(s)</b>	<b>PPE Required</b>	<b>PPE Recommended and/or Available</b>
Changing lamps	Cuts, lacerations	Leather gloves	
Welding	Burns	Welder's gloves	Welder's sleeves and apron
Working with tar kettle (or any melting equipment)	Burns	Long sleeves and apron, leather gloves	
Working with sharp metal	Cuts, lacerations		Cut-resistant (e.g. Kevlar) gloves
Working in the right-of-way, active roadway or on grounds at night	Impact, crush	Reflective Vest	
Working with electricity	Burns	Gloves	(note these gloves are required to be tested and certified)
Fire-fighting	Burns	Turnout gear, proximity gear (reflective of heat)	

<b>Work Function</b>	<b>Potential Hazard(s)</b>	<b>PPE Required</b>	<b>PPE Recommended and/or Available</b>
Responding to a medical emergency	Exposure to potential bloodborne pathogens	Latex, puncture-resistant, disposable gloves	
Police – simulation shooting	Flying projectiles, impact	Groin protection, Level II body protection, Long sleeve fatigue shirts, throat guard, neck drapes	
Police (using firearms)	Impact	Bullet-proof vests	

**3 REGARDING FOOT PROTECTION: (SEE KENT COUNTY DEPARTMENT OF AERONAUTICS SHOE POLICY)**

<b>Work Function</b>	<b>Potential Hazard(s)</b>	<b>PPE Required</b>	<b>PPE Recommended</b>
Operating mowing equipment	Cuts, roll-over	Foot Shields or steel-toed safety shoes	
Operating grounds keeping equipment	Cuts, roll-over	Foot shields or steel-toed safety shoes	
General maintenance using tools, heavy equipment	Roll-over, crush	Foot shields or steel-toed safety shoes	
Washing equipment using detergent	Chemical irritation, burns	Rubber boots	
Responding to a medical emergency	Exposure to potential bloodborne pathogens	Rubber boots or boot covers	
Fire-fighting	Burns, slips and falls	Boots	

#### 4 REGARDING HEAD AND HEARING PROTECTION:

<b>Work Function</b>	<b>Potential Hazard(s)</b>	<b>PPE Required</b>	<b>PPE Recommended</b>
Working under lift	Impact, crush	Hard Hat	
Working in or near an active construction site	Impact, crush	Hard Hat	
Vertical entry into confined space	Falling onto head, impact, crush	Hard Hat	
Operating a lawn mower (8 hour TWA)	Noise	Hearing Protection (inserts or muffs)	
Using the vacuum of the Street Sweeper (outside of cab)	Noise	Hearing Protection (inserts or muffs)	
Jack hammering	Noise	Hearing Protection (inserts or muffs or both)	
Concrete Cutting (using saw, wire brush, etc.)	Noise	Hearing Protection (inserts or muffs)	
Working with powered equipment (especially lawnskeeping)	Noise	Hearing Protection (inserts or muffs)	
Fire-fighting	Burns, falling debris onto head	Helmet	
Police – simulation shooting	Hot brass molten metal fragments, burns	Baseball Caps Shooter's muffs	

Noise measurements have been completed, see Hearing Conservation Program.

This information was included in a written program to assist in management and enforcement of PPE usage.

Evaluation was performed by:

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Deborah C. Alderink, CIH

\\airportpecert.doc

## *Certification*

Date: November 6, 2003 (amended November 2005)  
EHR Project No. 02-1326.07

Kent County Department of Aeronautics  
5500 44<sup>th</sup> Street, SE  
Grand Rapids, MI 49512

Subject: **CERTIFICATION**  
Personal Protective Equipment;  
Head, Hand, Face, Skin, Body, Hearing, Foot;  
Hazard Assessment

(I) (We) certify the following hazard assessment has been performed:

\_\_\_\_\_  
James Koslosky

\_\_\_\_\_  
Date

\_\_\_\_\_  
Deborah C. Alderink, CIH

\_\_\_\_\_  
Date

# ***Kent County***

## ***DEPARTMENT OF AERONAUTICS***

### ***RESPIRATORY PROTECTION PROGRAM***

---

#### **1 PURPOSE AND SCOPE**

The primary purpose of this respiratory protection program is to (i) reduce or control Department of Aeronautics' employee exposures to airborne contaminants through the use of engineering controls, elimination of hazardous materials (including substitution with less toxic materials), or use of local ventilation exhaust hoods; and (ii) to ensure that when respirator use is necessary, they are selected and properly used.

The Kent County Department of Aeronautics provides the following Respirator Usage Program for its employees in accordance with (i) the Michigan Department of Consumer and Industry Services - Occupational Health Standard Part 451, (ii) the Federal OSHA standard, 29 CFR 1910.134, (iii) the American National Standards Institute standard, (ANSI) Z88.2, and (iv) The Kent County Safety and Health Program.

#### **2 DEFINITIONS**

The following definitions of terms are provided to assist in the understanding and application of the MDCIS/OSHA Respiratory Protection standard.

**Breakthrough** - The penetration of challenge material(s) through a gas or a vapor air-purifying element. The quantity or extent of breakthrough during service life testing is often referred to as the percentage of the input concentration.

**Disposable Respirators** - A respirator that is discarded after the end of its recommended period of use, after excessive resistance or physical damage, or when odor breakthrough or other warning indicators render the respirator unsuitable for further use.

**Dust** - A solid, mechanically produced particle with a size ranging from submicroscopic to macroscopic.

**Emergency Respirator Use Situation** - A situation that requires the use of respirators due to the unplanned creation of a hazardous atmosphere (often of unknown composition) caused by an accident, mechanical failure, or other means and that requires evacuation of personnel, or immediate entry for rescue or corrective action.

**Escape Gas Mask** - A gas mask that consists of a half-mask facepiece or mouthpiece, a canister, and associated connections which is designed for use during escape from hazardous atmospheres.

**Filtering Face Piece** - A particulate respirator with a filter as an integral part of the face piece or with the entire face piece composed of the filtering medium. (See Single-Use Dust or Dust and Mist Respirators and Disposable Respirators.)

**Fit Factor** - A quantitative measure of the fit of a specific respirator facepiece to a particular individual.

**Fume** - A solid condensation particulate, usually of vaporized metal.

**Gas** - An aeriform fluid that is in a gaseous state at standard temperature and pressure.

**Immediately Dangerous to Life or Health (IDLH)** - Acute respiratory exposure that poses an immediate threat of loss of life, immediate or delayed irreversible health effects, or acute eye exposure that would prevent escape from a hazardous atmosphere.

**Mist** - A liquid condensation particle.

**Planned or Unplanned Entry into an IDLH Environment, an Environment of Unknown Concentrations of Airborne Hazardous Contaminants, or an Environment of Unknown Composition** - A situation in which respiratory devices are recommended to provide adequate protection to workers entering an area where the airborne contaminant concentration is above the IDLH or is unknown.

**Potential Occupational Carcinogen** - Any substance, or combination or mixture of substances, which causes an increased incidence of benign and/or malignant neoplasms, or a substantial decrease in the latency period between exposure and onset of neoplasms in humans or in one or more experimental mammalian species as the result of any oral, respiratory, or dermal exposure, or any other exposure which results in the induction of tumors at a site other than the site of administration. This definition also includes any substance that is metabolized into one or more potential occupational carcinogens by mammals (29 CFR 1910.103, OSHA Cancer Policy).

**Protection Factor (PF)** - Numerical factors which represent the protection efficiencies of different types of respirators. Protection factors are used to calculate the maximum concentration of a given substance for which a given type of respirator may be used, or "maximum use limit (MUL)". The MUL is calculated by the following equation:

$$\text{MUL} = \text{PF} \times \text{OSHA Permissible Exposure Limit}$$

The "assigned protection factor" (APF) represents the minimum anticipated protection provided by a properly functioning respirator or class of respirators to a given percentage of

properly fitted and trained users. For example, the APF is ten (10) for the half face air purifying respirator, fifty (50) for the full faced respirator, and one hundred (100) for a powered air purifying respirator.

**Recommended Exposure Limit (REL)** - An 8 or 10 hour time weighted average (TWA) or ceiling (C) exposure concentration recommended by the National Institute of Occupational Safety and Health (NIOSH) that is based on an evaluation of health effects data.

**Service Life** - The length of time required for an air purifying element to reach a specific effluent concentration. Service life is determined by the type of substance being removed, the concentration of the substance, the ambient temperature, the specific element being tested (cartridge or canister), the flow rate resistance, and the selected breakthrough value. The service life for a self-contained breathing apparatus (SCBA) is the period of time, as determined by the NIOSH certification tests, in which adequate breathing air is supplied.

**Single-Use Dust Respirator or Dust and Mist Respirators** - Respirators approved for use against dusts or mists that may cause pneumoconiosis and fibrosis.

**Vapor** - The gaseous state of a substance that is solid or liquid at standard temperatures and pressures.

### 3 PROGRAM RESPONSIBILITY

The Department Director or his/her designee is responsible for periodically evaluating and if necessary changing or updating this respirator usage program. In addition, the Director or his/her designee is responsible for:

- Evaluation of the work environment where employees are using respiratory protection;
- Implementation and assessment of the effectiveness of any necessary engineering controls; and
- Arranging for proper air monitoring as necessary.

### 4 AIR PURIFYING RESPIRATORS

#### 4.1 Selection

Air purifying respirators are selected according to the guidance of American National Standards Institute practices for Respiratory Protection (Z88.2-1969). Respirator selection is based on:

- The anticipated or known hazard;
- The type of respiratory hazard including:
  - physical properties
  - physiological effects on the body

- air concentration of the material
- established exposure limits
- IDLH concentration;
- The location of the hazardous area in relationship to the nearest respirable air;
- The length of time for which respiratory protection must be provided;
- The work activities that must be performed;
- The physical characteristics, functional capabilities, and limitations of various types of respirators;
- The respirator protection factor; and
- Whether or not spectacles or goggles are required.

The Department of Aeronautics provides NIOSH approved air purifying respirators as follows:

- Disposable Dust/Mist Respirators (for voluntary use);
- Half-face, Dual Cartridge Respirators;
- Full-Face, Dual Cartridge Respirators;
- Full-Face, Gas Masks (police activities); and
- Air-supplied hoods, sandblasting.
- In addition, ARFF personnel use Self-Contained Breathing Apparatus (SCBA) for Fire-Fighting activities and SCBAs are provided for Facilities Personnel for escape purposes in the Boiler Room (See Section 7).

The Department of Aeronautics will make every effort to offer two different styles, brands, and sizes (medium and large) of air-purifying respirators.

#### ***4.2 Exposure Monitoring***

Air monitoring will be performed once a determination is made that indicates the possibility of any significant employee exposure to airborne chemical contaminant(s). Based on the exposure monitoring results, air purifying respirators will be selected to ensure that the respirator's assigned protection factor is not or will not be exceeded.

TYPICAL PROTECTION FACTORS ASSIGNED TO AIR-PURIFYING RESPIRATORS	
TABLE I	
Respirator Type	Protection Factor
Half-face	10
Full-face	50

### 4.3 Respirator Usage

#### 4.3.a Medical Determination

A medical questionnaire (Part A of Appendix C to Part 451) will be provided to all Department of Aeronautics personnel to determine their ability to use a respirator, before the employee is fit tested or required to use the respirator. This evaluation will be reviewed by a licensed Health Care Provider. If a positive response is given to any questions among questions 1 through 8 in Section 2, Part A of Appendix C, the employee will be offered a medical exam, including pulmonary function testing. In addition, a medical evaluation will be offered for any employee or supervisor who reports respiratory or cardiovascular difficulties when using a N-95 air purifying respirator or a Self Contained Breathing Apparatus (SCBA). Employees and supervisors are instructed to report any cardiovascular or respiratory symptoms immediately.

#### 4.3.b Fit Testing

**Qualitative Facepiece-To-Face Fit Testing:** Qualitative facepiece-to-face fit testing is performed by the Director or his/her designee or when necessary by an Industrial Hygienist. Qualitative fit tests are performed when a new respirator is issued, annually, or on an as needed basis.

Fit testing records are maintained by the Department Director or his/her designee.

QUALITATIVE FACE FIT TESTING PROTOCOLS FOR AIR-PURIFYING RESPIRATORS <sup>1</sup>		
TABLE II		
Respirator	Cartridges/Filters	Protocol
Half-face	Organic Vapor Particulate	Odorous Vapor Test Irritant Smoke Test
Full-face	Organic Vapor Particulate	Odorous Vapor Test Irritant Smoke Test

<sup>1</sup> For methods, see Appendix A.

Employees are instructed to perform positive and negative pressure facepiece-to-face seal tests (see Appendix A) each and every time the respirator is placed on and fitted. Respirator facepiece-to-face seal problems will be assessed as necessary.

**Interferences with Facepiece-to-Face Fit:** Air-Purifying respirators will not be used when conditions that interfere with a good facepiece-to-face seal are present. Such conditions may include facial scars, deformities, facial hair, and weight loss or gain (more than 20 lbs.).

Employees required to use respiratory protection cannot have a beard, long sideburns, long mustache or any other facial hair such as a goatee which may interfere with the facepiece-to-face seal or valve function.

As a proper seal cannot be established if eyeglass temple bars extend through the sealing edge of a full facepiece, personnel are required to wear frames that do not pass through the seal area of the facepiece. Any facepiece with corrective lenses will be fitted by a qualified individual to provide good vision, comfort, and a proper seal. Contact lenses are permitted if so desired.

#### 4.3.c Issuing Respirators and Respirator Care

Air-purifying respirators are provided on an individual basis, except for the gas masks which are available for police personnel. Sharing air-purifying respirators which have been cleaned and sanitized is permitted. Each employee is responsible for the use, care, and storage of his/her personal respirator or any respirator after use. Respirators, other than the disposable type, are to be cleaned in warm water with mild detergent after they have been used. No other cleaning solution is to be used to clean the respirators. Respirators are to be air dried on a clean surface. Respirators are to be stored in a clean and dry condition in a large, sealed, plastic, sealable bag. The facepiece and exhalation valve should be stored to avoid distortion.

## 5 LIMITATIONS

Air purifying respirators do not supply oxygen, therefore they are never to be used in oxygen deficient atmospheres (oxygen concentration of less than 19.5%). Additionally, because air purifying respirators do not supply oxygen and have relatively low protection factors, under no circumstances are air purifying respirators to be used in uncharacterized atmospheres or atmospheres Immediately Dangerous to Life or Health (IDLH).

## 6 EMPLOYEE EDUCATION

The Department of Aeronautics provides initial as well as on-going education in:

- The use, fit, wear, cleaning, maintenance, storage and limitations of air-purifying respirators (including gas masks) and self-contained breathing apparatus (SCBA) devices (see Appendix A). This training is provided initially when a respirator or SCBA facepiece is issued and again each year during annual refresher training. Employees are trained to use the equipment in accordance with manufacturer

recommendations and are instructed to report any malfunctioning of equipment or parts to their supervisor.

- Respirator hygiene, daily inspections, replacement, storage practices, disposal practices of used cartridges or canisters, respirator limitations, and methods to guard against equipment damage.

Personnel training records, documenting successful completion of respirator usage training are maintained by the Department Director or his/her designee.

## **7 EMERGENCY SITUATIONS - SCBA USE**

Under no circumstances are Kent County Department of Aeronautics employees (other than trained firefighters, Building Maintenance) authorized to perform emergency rescue or fire fighting activities, and employees shall not enter or work in an area in which the atmosphere is immediately dangerous to life or health, or is oxygen deficient. See ARFF's Respiratory Protection Program).

Only personnel, trained to use self-contained breathing apparatus devices, will perform emergency response procedures or use an SCBA for escape purposes.

The following sections outline Kent County Department of Aeronautics policy regarding SCBA use:

### **7.1 *SCBA Inventory***

#### **7.1.a Allocation**

SCBA devices are available in the Boiler Room, Basement (Terminal) and are accessible to qualified facilities employees. The location is clearly marked. In addition, SCBAs are available for ARFF members.

#### **7.1.b Recordkeeping**

An individual record of each SCBA regulator and harness assembly will be maintained by the Building Maintenance Supervisor and archived in the inspection folder (in the case). This record includes serial numbers, date of purchase, date of manufacture, date placed in service, storage location, maintenance and repairs, replacement parts, upgrading, and test performance.

### **7.2 *SCBA Selection***

Only SCBA devices of the pressure demand open circuit design will be available for use.

To ensure employee acceptance of SCBA usage, factors such as comfort, adequate visibility, provisions for eyeglass wearers, ability to communicate, ability to perform required job tasks, and confidence in fit will be considered when selecting respirators for use.

## **7.3 SCBA Inspection and Care**

### **7.3.a In-Service Inspections**

#### **7.3.a.1**

Monthly inspections are performed on all SCBA devices and include an entire check of each unit for deteriorated components. Other monthly checks are performed to assure that all equipment operates and functions within manufacturer specifications and design. These checks include tightness of connections, and the condition of the various parts including the facepiece, head straps, low pressure and high pressure hoses, cylinder and valve integrity, gauge comparisons, reducing and bypass valve operation, and regulator, exhalation valve, low air alarm operations and a check of elastomeric parts for pliability and signs of deterioration. A certification of inspection and SCBA determination (regulator and alarms in working condition, etc.) is maintained in the storage case. The certification will contain the serial number of the inspected respirator, the date of inspection, and the name of the person performing the inspection.

#### **7.3.a.2**

Anytime an operational problem is reported or defects are detected during inspections, the suspect SCBA will be immediately tagged, removed from service and submitted to an approved vendor for inspection, repairs, and service.

#### **7.3.a.3**

Anytime a SCBA is used, the SCBA shall be brought to the Building Maintenance Supervisor's office. They will make the necessary arrangements to have the cylinder re-filled and inspected by qualified individuals. Air cylinders will be maintained in a fully charged state (recharging will occur when the pressure falls to 90% of the fully charged position).

### **7.3.b Manufacturer's Representative Inspections & Repairs**

Inspection and servicing of each SCBA will be performed by a vendor approved by the Facilities Maintenance Supervisor, when necessary.

### **7.3.c SCBA Care**

#### **7.3.c.1**

Inspection and cleaning of each SCBA will be conducted by the user after each and every use.

SCBA Facepieces: Employees are instructed to: (i) Check appropriate items as listed under air-purifying respirators. (ii) Check faceshield for cracks or breaks, and abrasions or distortions that would interfere with vision. (iii) Check air supply hoses and detachable coupling attachments for breaks or kinks. (iv) Check the integrity and air pressure for the breathing air cylinder. Check the integrity of the regulator, belt strap, and all straps and buckles. Assure that all couplings used with

supplied air lines and respirators are incompatible with all other compressed gases couplings and attachments.

### **7.3.c.2 Disinfection**

Disinfection is required when a respirator is worn by more than one person. One of the following procedures may be used when disinfecting respirators:

- Immerse the facepiece (first remove all external coverings and equipment) for two minutes in detergent and water. Afterwards rinse and thoroughly dry.
- Purchase a commercially prepared disinfection solution and use according to the manufacturer's instructions.

### **7.3.c.3**

SCBA facepieces are to be cleaned, disinfected, inspected, and properly stored after each and every use. Employees are instructed to store facepieces dry, as wet facepieces provide a nutrient rich and wet/humid environment which is ideal for microbial growth. See Appendix A for further information on respirator care.

## **7.3.d Cylinder Testing, Maintenance, and Recharging**

### **7.3.d.1**

Air cylinders are hydrostatically tested and internally inspected, within manufacturer specified time periods, by an approved vendor.

### **7.3.d.2**

For each cylinder, external inspections are conducted in accordance with manufacturer recommendations.

### **7.3.d.3**

Air cylinders found to be damaged or operating outside acceptable parameters will be tagged and removed from service.

### **7.3.d.4**

All air cylinders are maintained with not less than 90 percent of the rated pressure stamped on the cylinder. Cylinders with less will be tagged, removed from service, and recharged.

### **7.3.d.5**

All air cylinders are filled, according to manufacturer instructions, with Type I Grade D breathing air (as described in Compressed Gases Association Commodity Specification G-7 1-1989). Only personnel or vendors, who are trained in the proper procedures and equipment, may recharge cylinders.

## **7.4 SCBA Usage**

### **7.4.a Medical Determination**

See Section 4.2.a. Prior to performing the exam the medical facility or physician is provided with information concerning any personal protective equipment that may be worn (protective suits, SCBA, etc.), and any potential occupational hazards that may be encountered during emergency operations.

Employees are instructed to report any cardiovascular or respiratory symptoms immediately.

### **7.4.b Fit Testing**

#### **7.4.b.1**

**Quantitative Facepiece-To-Face Fit Testing:** Quantitative facepiece-to-face fit testing is performed by a qualified person initially and annually thereafter, or on an as needed basis.

Fit testing records are maintained by the individuals and are stored in personnel files.

Employees are instructed to perform positive and negative pressure facepiece-to-face seal tests (see Section 4.2.b) each and every time the facepiece is placed on and fitted. Only personnel with a properly fitted facepiece are permitted to function in a hazardous atmosphere. Facepiece-to-face seal problems will be assessed as necessary.

#### **7.4.b.2**

**Interferences with Facepiece-to-Face Fit:** SCBAs are not to be worn by any employee having a beard, long sideburns, long mustache or any other facial hair which may interfere with the facepiece-to-face seal.

As a proper seal cannot be established if eyeglass temple bars extend through the sealing edge of a full facepiece, personnel are required to wear frames that do not pass through the seal area of the facepiece. Contact lens use may be permitted once the employee demonstrates there is no problem. Any facepiece with corrective lenses will be fitted by a qualified individual to provide good vision, comfort, and a proper seal.

### **7.4.c Usage Criteria**

The following Kent County Department of Aeronautics criteria governs the usage of SCBA devices:

#### **7.4.c.1**

Respiratory protection must be worn by all personnel performing emergency search and rescue operations or where the possibility of a contaminated, IDLH, or oxygen deficient atmosphere exists.

**7.4.c.2**

Respiratory protection must be properly worn.

**7.4.c.3**

Personnel using SCBA devices must operate in teams of two or more and must be in constant communication with each other through visual, audible, physical, safety guide rope, electronic, pre-arranged set of hand signals or other means. Kent County Department of Aeronautics adheres to the two in and two out rule (minimum).

**7.5 Employee Education and Training**

In addition to the requirements listed in section 6.0, Kent County Department of Aeronautics requires that Building Maintenance employees be provided with the following training and education:

**7.5.a**

The most current information available concerning safe and effective operation of SCBA equipment.

The safe operation of SCBA equipment, use and limitations of SCBA equipment, and the individual limitations of personnel who are required to use SCBA devices.

**7.5.b**

The specific requirements of this policy and SOP.

**7.5.c**

Through a monthly evaluation process, personnel must successfully demonstrate their knowledge of SCBA safety procedures and practices.

**8 RESPIRATOR USAGE PROGRAM REVIEW AND PROCEDURES**

The Department Director or his/her designee will review this program once a year or as necessary to ensure the continued effectiveness of the program.

Respirator Usage Program Effective Date: \_\_\_\_\_

Date of Program Implementation: \_\_\_\_\_

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# ***Kent County***

## ***DEPARTMENT OF AERONAUTICS***

### ***CONTROL OF HAZARDOUS ENERGY***

#### ***LOCKOUT, TAGOUT***

---

## **1 PURPOSE AND SCOPE**

The purpose of this policy is to establish a program and institute procedures for the lockout or tagout of energy isolating devices whenever maintenance, servicing, or adjustment is performed on equipment at the Gerald R. Ford International Airport. It shall be implemented to ensure that the equipment is stopped, isolated, and locked or tagged out before Department of Aeronautics personnel perform any servicing, maintenance, or adjustment where the unexpected energization or start up of equipment or release of stored energy could cause injury.

This policy provides a lockout/tagout program in accordance with OSHA 29 CFR 1910.147 (adopted by Michigan Department of Consumer and Industry Services, Part -85) for the control of hazardous energy and the Kent County Safety and Health Policy.

## **2 DEFINITIONS**

**Affected Employee** - An employee whose job requires him/her to operate or use equipment on which servicing, maintenance, or adjustment is being performed under lockout or tagout, or whose job requires him/her to work in an area in which such servicing or maintenance is being performed.

**Authorized Employee** - An employee who locks or tags out equipment in order to perform servicing, maintenance, or adjustment. An affected employee becomes an authorized employee when that employee's duties include servicing, maintenance, and/or adjustment as covered under this policy.

**Bleed** - Procedure used to release stored hydraulic, steam, or chemical energy.

**Block-Out** - Procedure used to prevent machinery or equipment movement.

**Energized Equipment** - Machine, equipment, or mechanical device connected to an energy source or contains residual or stored energy.

**Energy Isolating Device** - A device that physically prevents the transmission or release of energy (manually operated circuit breaker, pipe valve, blocking, etc.)

**Energy Zone** - Zone where all sources of power to a given piece of machinery or equipment are located.

**Lockout** - Placement of a lockout device on an energy isolating device, in accordance with established procedures, ensuring that the energy isolating device and the equipment being controlled cannot be operated until the lockout device is removed.

**Lockout Device** - A lockable key device which holds an energy isolating device in a safe position to prevent the unexpected energization of machinery or equipment.

**Under no circumstances are combination locks to be used for locking out energy isolating devices.**

**Normal Operations** - The utilization of machinery or equipment to perform an intended Department of Aeronautics function.

**Point-of-Operation** - The area in or on a piece of equipment where an associated danger exists.

**Servicing and/or Maintenance** - Activities such as construction, installation, setting up, adjustment, inspecting, modifying, and maintaining and/or servicing machines and equipment. These activities include lubrication, cleaning, unjamming, and adjustment of equipment or tool changes, where employees may be exposed to the unexpected energization or start up of equipment or release of hazardous energy.

**Set Up** - Any work performed to prepare a machine or equipment for normal operations.

**Tagout** - Placement of a tagout device on an energy isolating device, in accordance with an established procedure to indicate that the energy isolating device and the equipment being controlled may not be operated until the tagout device is removed.

**Try-Out** - Procedure used, after locking out equipment, to attempt the operation of equipment prior to beginning work activities.

### **3 APPLICATION**

The lockout and tagout procedures apply to situations where the motion, energization, start-up, or release of stored energy from any machine, equipment, or process which would likely injure an employee performing service, maintenance, cleaning or any other associated activity.

### ***3.1 Energy Sources Identification***

Potential terminal, maintenance buildings, and grounds hazardous energy sources may include:

- Electrical
- Compressed Air
- Fluid Hydraulic
- Steam
- Mechanical
- Chemical
- Water
- Natural Gas
- Gravity
- Pneumatic
- Thermal
- Springs

Examples include hoists, drill press, etc.

### ***3.2 Procedures***

When performing lockout/tagout procedures, each employee will be provided, where applicable, with a procedure specific for that machine or piece of equipment. These procedures are included in the lockout/tagout compliance manual.

### ***3.3 Authorized Employees***

Only Authorized employees will lockout, tagout, or otherwise isolate equipment and machinery. The Department of Aeronautics considers all Field and Building Maintenance employees as "Authorized".

### ***3.4 Non-Exempt Operations***

This policy applies to the control of energy during maintenance, service, adjustment, and cleaning of equipment. Usual and normal operations are not covered. However certain "normal" operations are covered by this policy when:

- Department of Aeronautics personnel must remove or bypass equipment guards or other safety devices; or
- Department of Aeronautics personnel must place any part of their body into the point of operation of equipment, or where an associated danger exists during equipment operating cycles.

### ***3.5 Exempt Operations***

This policy does not apply to minor adjustments which occur during normal Department of Aeronautics operations or to tasks that are routine, repetitive, and necessary for normal operations. However, such adjustments must be performed using safety measures that provide adequate protection.

## **4 PERIODIC INSPECTIONS**

Periodic inspections will be performed annually to ensure that the lockout/tagout procedures and requirements are being followed.

Annual inspections will be on unannounced days and shifts and shall include:

- Whether steps in the Lockout/Tagout Program are being implemented;
- Whether Department of Aeronautics personnel know their responsibilities under the Policy procedures; and
- Whether the procedures are adequate to provide the necessary protection; and what changes, if any, are needed.

Inspections will be conducted by a person who is not directly responsible for the supervision of the inspected work area.

All persons involved in the work assignment being inspected will be identified, including persons in the affected work area and the person conducting the inspection. The Lockout/Tagout inspection report will also include the date, machine or equipment, and any resulting corrective action and will be retained by the Department Director or designee for a period of one year.

## 5 TRAINING

Initial lockout/tagout training will be provided to all authorized and will include:

- The purpose and use of lockout/tagout procedures;
- The nature and magnitude of the hazardous energy sources;
- Recognizing and understanding potential hazardous energy sources;
- The proper means and methods for control of hazardous energy sources; and
- The limitations of using tags when tagging out energy sources.

Designated employees will also be trained in the skills and techniques necessary to distinguish exposed live electrical equipment from other electrical equipment, the skills and techniques necessary to determine the nominal voltage of exposed electrical equipment; and will be familiar with the safe work practices as required by OSHA 29 CFR 1910.331-335. See Appendix B.

New employees will receive lockout/tagout training during their initial orientation employment period. Refresher training will be provided:

- Annually;
- If an audit reveals a need for immediate training;
- If there is a change in personnel, maintenance procedures, or energy control procedures; or
- If an employee injury results from improper lockout/tagout procedures.

The Department Director or his/her designee is responsible for maintaining a list of all Department of Aeronautics personnel trained in the Lockout/Tagout Policy and Procedures.

## 6 EQUIPMENT

### ***6.1 Safety Locks and Tags***

All authorized personnel will use danger tags. These danger tags are completed at the time of use and will contain the employee's name. In addition to tags, the authorized personnel will be issued personal keyed safety locks for which two keys are available. One key will be retained by the employee and one will be retained by the Building Maintenance or Field Maintenance Supervisors. Personal safety locks will be stamped with the employee's name.

### ***6.2 Equipment Padlocks, and Multiple Lock Adapters***

Equipment locks and multiple lock adapters (allows the use of multiple locks) can be obtained from the Field Maintenance Supervisor and/or the Building Maintenance Supervisor.

## 7 CONTROL PROCEDURES

### ***7.1 Equipment Lockout/Tagout***

#### **7.1.a Shutdown**

Prior to turning off or disconnecting equipment, the employee will review the type of hazardous energy, and the means for safely controlling that hazard.

The employee performing the lockout will inform all affected personnel of the shutdown. Subsequently, if a specific procedure for the de-energization and shutdown of the process or equipment exists, the procedures will be immediately implemented.

De-energization and lockout procedures for specific machinery or equipment are not required if the following criteria are met:

- No potential for stored or residual energy or re-accumulation of stored energy exists after shutdown (this must be identified and documented);
- A single energy source is identified and isolated;
- Locking out that single energy source will completely de-energize and deactivate the equipment;
- The energy source is isolated and locked out from the equipment;
- A single lockout device will achieve a locked-out condition;
- The lockout device is under the exclusive control of the authorized employee;
- Servicing and/or maintenance does not create a hazard for employees; and
- When utilizing this exception, no accidents involving the unexpected activation or re-energization of machinery or equipment have occurred during servicing or maintenance.

All energy control lockouts will be located and operated in such a manner that will isolate the equipment or process from the energy source.

#### 7.1.b Application of Locks and Tags

Before turning off and locking out main disconnect switches and to prevent arcing, and possibly an explosion, employees must assure that all power is shut off at the point of operational control (e.g. equipment control panel).

A keyed safety lock, multiple lock adapter, and personal danger tag will be placed on the energy isolation device for the equipment where the work is being performed. The lock must secure the equipment in a "safe" or "off" position. Each employee working on the equipment or process should apply his or her own lock.

When devices such as blocks, jack stands or chocks are required to complete the lockout, they shall be used in addition to the lockout and tag procedure, not as a substitute.

#### 7.1.c Stored or Residual Energy

Once locks and tags have been applied to the energy isolation source, all hazardous stored or residual energy shall be released, restrained, disconnected, or otherwise rendered safe.

If there is a possibility of stored energy re-accumulating to a hazardous level, isolation verification activities shall continue until the servicing or maintenance is completed, or until the possibility of accumulation no longer exists.

#### 7.1.d Verification

Prior to beginning work on locked and tagged out equipment, authorized personnel shall verify the isolation and de-energization of Department of Aeronautics equipment. To accomplish this, the authorized employee(s) shall attempt to operate the equipment.

#### 7.1.e Lockout Removal

Before Department of Aeronautics equipment can be released from lockout/tagout, the following procedures must be implemented:

- The immediate work area and equipment will be inspected to ensure that all non-essential tools and equipment are removed from the area. The locked out/tagged out equipment shall be inspected to ensure that all components and safety devices are functionally intact.
- The work area shall be inspected to ensure that all employees in the area have been safely positioned and/or removed; and
- Personnel in the affected work area will be notified that lockout and tagout devices are being removed and start up will take place.

Each lockout/tagout shall be removed from the energy isolating source by the employee who applied the device.

**Exception:** If it has been verified that the employee applying the lockout/tagout is no longer at the worksite and a reasonable attempt has been made to contact the employee to

inform him/her that the lockout/tagout device is to be removed, his/her supervisor may implement the following lockout/tagout removal procedure:

- The Supervisor, along with an employee from the same Department (e.g. Field Maintenance or Building Maintenance), will inspect the equipment to ensure that all safety devices and components are functionally intact before removing the lock and tag. All other procedures for a normal lockout/tagout removal will be followed. Once these are completed, and upon approval of the Supervisor (the Supervisor must also ensure that no employees will be endangered or equipment will be damaged by energization and subsequent start-up) the lockout and tagout may be removed.
- The removed lock must then be forwarded, along with an explanation, to the Supervisor.
- A report of the incident shall be sent to the Supervisor for follow-up corrective action.

Once the employee resumes work on the Department of Aeronautics grounds, he/she must be informed that their lockout/tagout device has been removed.

## ***7.2 Equipment Tagout***

When tagging out equipment, the policy, as outlined in the lockout/tagout procedure, will be implemented when de-energizing and performing servicing, maintenance and/or adjustment of Department of Aeronautics equipment. However tags, rather than locks will be used to identify equipment, which has been de-energized and removed from service. Tagout devices should be affixed to equipment in such a manner as to clearly indicate that the operation or movement of isolation devices from an "off" or "safe" position is prohibited. Where a tag cannot be affixed directly to an energy isolation device, the tag shall be located as close as possible to the device so as to be immediately obvious to anyone attempting to operate the device.

Department of Aeronautics equipment may be tagged out unless:

- The equipment is provided with electrical or other energy isolation devices which can be locked out;
- Guarding or other safety devices must be removed or bypassed to perform servicing, maintenance, or adjustment;
- Equipment is provided with electrical cords and/or plugs which are connected to a power source in excess of 110 volts (a lockout device must be applied to the plug along with a danger tag); and
- Equipment is not provided with electrical cords and/or plugs which can be physically removed and tagged from a 110 volt power outlet.

## ***7.3 Additional Requirements***

### ***7.3.a Testing or Adjustment of Equipment***

Employees in situations which require the temporary removal of locks and/or tags are required to utilize all lockout/tagout procedures as outlined in sections 7.1 and 7.2.

### 7.3.b Vehicle and Field Equipment Lockout

Equipment or vehicles will be considered locked out if the ignition key is removed from the ignition and the key is in the employee's possession. If the equipment/vehicle will be out of service and locked out for more than one shift, the employee will notify his/her supervisor. Equipment/vehicle keys are not to leave the facility. These keys will be placed in the Ignition Key Lockbox located in the supervisor's office. The appropriate form posted on the door of the lockbox will be filled out by the employee.

### 7.3.c Group Lockout

When more than one employee is involved in a job associated lockout/tagout, a **Multiple Lock Adapter** shall be attached to the electrical or energy isolating device(s). Each employee will affix his/her own lock to this adapter and will remove only when their phase of the work is completed. Supervisors will coordinate multiple lockout activities for Department of Aeronautics personnel and will ensure the continuity of employee protection. All lockout/tagout procedures as outlined in sections 7.1 and 7.2 shall be implemented.

### 7.3.d Continuing Multi-shift Work

In situations where work being performed on the current shift will continue to the succeeding shift, a Supervisor shall be responsible for continuity of employee protection. To ensure this continued protection, an **Equipment Lock**, along with a **Multiple Lock Adapter** must be installed by the shift person(s) working on the equipment prior to removing their personal locks. Equipment locks are located in the Supervisor's office. The locks are uniform in color, have one key only, and are labeled "**Equipment Lock**". For identification each lock is numbered. The Supervisor will issue the lock and fill out the lock log sheet in the office. The information on the log sheet will include date installed, lock number, location, supervisor, and date removed. **The Equipment Lock is not to be used in place of personal locks.** All personnel working on the project assignment are required to install their personal locks in addition to the Equipment Lock.

An employee who is assigned to a job and upon arrival finds an Equipment Lock, multiple lock adapter, and danger tags affixed to the equipment shall initiate the following procedures:

- Affix his/her personal lock to the multiple lock adapter; and
- Try-out the operating controls to ensure no unintended motion will occur when starting work or testing the equipment, machine or process. Use the appropriate test equipment to determine that the energy isolation is effective.

### 7.3.e Outside Personnel or Contractors

All outside personnel and contractors are required to adhere to the Kent County Department of Aeronautics' Lockout/Tagout Policy, if applicable. The contractor will be provided with the policy and is responsible for ensuring that their employees are informed of the policy and procedures. Under no circumstances will contractors be allowed access until they have certified their understanding of this policy and procedures and will ensure total compliance with this program. When it is necessary for outside contractors or personnel to lock or tagout equipment, the following procedures shall be implemented:

- The contractor assigned to the project shall follow the procedures outlined in this policy when locking or tagging out equipment;
- The contractor or his representative shall attach the contractor's lock(s) or tag(s); and
- The contractor shall be responsible for removing their own locks and tags when the work is complete.

Procedures specific to each work situation will be developed and communicated to all involved personnel and implemented to ensure the continuity of lockout protection. To minimize exposure hazards from the unexpected energization, start-up of equipment, or release of stored energy, these procedures will include provisions for the orderly transfer of lockout devices between off-going and on-coming employees.

There will be no exceptions to this rule.

## **8 POLICY ENFORCEMENT**

Supervisors are responsible for enforcement of the Lockout/Tagout Policy. Personnel found in violation of this Policy will be subject to disciplinary action.

Anyone who directs an employee to violate or have knowledge of a violation and take no corrective action, will receive appropriate disciplinary action up to and including disciplinary suspension and possible discharge.

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# ***Kent County***

## ***Department of Aeronautics***

### ***CONFINED SPACE ENTRY***

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#### **1 PURPOSE**

Any operation conducted by persons while inside a confined or process space is dangerous by nature. The purpose of this policy is to minimize the health and safety risks associated with confined space entry and to assure that Kent County Department of Aeronautics' employees do not sustain serious injury while working in a confined space. This procedure, with appendices, constitutes a written program in accordance with:

- The Occupational Safety and Health Administration (OSHA) Standard 29 CFR 1910.146(c)(4) for Permit-Required Confined Spaces Entry as adopted by the Michigan Department of Consumer and Industry Services (MDCIS) formerly MIOSHA, Part 90;
- MDCIS 325.50201-31 (Occupational Health Standards For Construction, Part 2. Tunnels, Shafts, Caissons, and Cofferdams);
- MDCIS Rule 6402 (Occupational Health Standards For Construction, Control Measures for Hazardous Atmospheres in Confined Spaces);
- MDCIS Department Of Labor Safety Standards Rules 408.40901-53 (Part 9. Excavation, Trenching, and Shoring); and
- MDCIS, Part 1, General Rues, Rule 114 (g).

#### **2 CONFINED SPACE EVALUATION**

##### ***2.1 Definition***

A confined space is a space that (a) is large enough and so configured that an employee can bodily enter and perform work; (b) has limited or restricted means for entry or exit; and (c) is not designed for continuous employee occupancy.

##### ***2.2 Evaluation and Classification of Confined Spaces***

Kent County Department of Aeronautics' employees, as part of their work duties and job classification, may be required to enter potential confined spaces at the Gerald R. Ford International Airport (Terminal, Grounds, Field Maintenance, etc). Any new suspect areas or pieces of equipment that have not been classified will be evaluated prior to entry. This evaluation will include a review of usage and contents to identify any conditions which, might warrant classification of a space as a confined space. Additionally, any and

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all construction excavations greater than four feet, (which is not properly shored or sloped), tunnels, and pipelines will be considered confined space areas.

All spaces will be evaluated according to the following criteria:

#### 2.2.a Permit-Required Confined Spaces

A permit-required confined space is a space that has one or more of the following characteristics:

- Contains or has a potential to contain a hazardous atmosphere;
- Contains a material that has the potential for engulfing an Entrant;
- Has an internal configuration such that an Entrant could be trapped or asphyxiated by inwardly converging walls or by a floor which slopes downward and tapers to a smaller cross section; or
- Contains any other recognized serious safety or health hazard such as heat stress.

Examples include sanitary manholes, water valve manholes, heavy equipment hoist pit, stormwater drains and manholes, pump stations, electrical vaults and boilers.

#### 2.2.b Alternate Entry – Permit-Required Confined Spaces – Atmospheric Hazards Only

A confined space – “atmospheric hazards only” is a space that contains an atmosphere which may expose employees to the risk of death, incapacitation, impairment of ability to self-rescue, injury, or acute illness from one or more of the following causes:

- Flammable gas, vapor, or mist in excess of 10% of its Lower Explosive Limit (LEL);
- Airborne combustible dust at a concentration that meets or exceeds its LEL;
- Oxygen level below 19.5 or above 23.5%;
- Concentration of any substance in excess of its published OSHA/MDCIS permissible exposure limit (PEL); and
- Any other atmospheric condition that is immediately dangerous to life or health (IDLH).

Examples include inactive (new) manholes.

#### 2.2.c Non-Permit Spaces

A non-permit confined space is a space which is not designed for continuous occupancy and has been proven, by testing and assessment, to pose no actual or potential atmospheric hazards, does not present engulfment hazards from bulk materials, does not have inwardly converging walls or a floor which tapers to a small cross section, and contains no other recognized safety hazards. These spaces will be made safe by opening all access doors and following proper lock-out procedures for appropriate equipment.

A non-permit space can be easily reclassified if, by testing, a hazardous atmosphere is detected, such as carbon monoxide gas concentrations in excess of 35 ppm averaged over an eight hour workday or 100 ppm averaged over 15 minutes or if work activities such as welding or the use of chemicals capable of causing a hazardous atmosphere occur.

Examples include air handling units, elevator pits, pipe chases.

### **3 PERMIT-REQUIRED CONFINED SPACE ENTRY PROGRAM**

This program will be implemented without exception in areas designated as a permit-required confined space, or in areas where a confined space has been upgraded from an alternate entry or non permit-required confined space.

#### ***3.1 Postings & Labels***

Where feasible, and in accordance with 29 CFR 1910.146 (c)(2), warning signs will be posted and communicated at each Permit-Required Confined Space. Manhole covers do not/will not have signs posted.

If there are changes in a confined space which previously was not a permit space, Kent County Department of Aeronautics personnel will re-evaluate the suspect space to determine if it has become a permit-required confined space.

#### ***3.2 Permit System***

The Confined Space Entry Permit, included as Appendix C, which is being implemented in accordance with 29 CFR 1910.146 (d)(10)(e)(f) is used to authorize employee entry into a space which has been classified as a Permit-Required Confined Space. Entry of a permit-required classified space is prohibited unless this form has been properly completed and all indicated actions are taken. This form must be reviewed and signed by a Kent County Department of Aeronautics representative who has signatory authority and has been designated as an Entry Supervisor.

The Entry Supervisor will complete the permit prior to authorizing entry into a confined space. Additionally, the Entry Supervisor will cancel the permit when the work has been completed or at the end of his/her work shift.

The permit will be posted at the space or with the attendant and will only be removed after the work or shift has been completed. These permits will be maintained by Kent County Department of Aeronautics for a minimum of one (1) year. [29 CFR 1910.146 (e)(ii)(6)]

All employees entering the permit-required confined spaces are to be listed on the permit. It is the responsibility of the attendant to prevent unauthorized employees from entering the space.

Only the Entry Supervisor may terminate, cancel or remove the permit. All employees will be removed from the confined space prior to the cancellation of the permit.

### **3.3 Entry Procedures**

#### **3.3.a Entrance Covers**

Any conditions making it unsafe to remove an entrance cover will be eliminated before a cover is removed. When entrance covers are removed, the opening will be guarded, if necessary, to prevent employees from falling through the opening and to protect Entrants from falling objects.

#### **3.3.b Testing & Air Quality**

##### **3.3.b.1 Purpose**

Pre-entry and periodic testing (see section 3.3.b.7) are mandatory for any confined space entry. The purpose of testing is to confirm that the space atmosphere is:

- Respirable (i.e., safe to breathe without using a respirator); and
- Does not present a flammable or explosive hazard.

##### **3.3.b.2 Entry Supervisor**

The Entry Supervisor will complete a confined space entry permit prior to authorizing entry into a permit space.

##### **3.3.b.3 Unacceptable Air Quality**

As a result of pre-entry testing, if the permit space atmosphere has been determined to be unfit to breathe without respiratory protection, it shall immediately be recorded on the entry permit.

Entry shall not be made or, if persons are already inside, they shall immediately exit, in the event any of the following conditions are found:

- The oxygen content is less than 19.5% or more than 23.5%;
- The combustible gas content is greater than 10% of its LEL; or
- Any air contaminant exceeds its OSHA/MDCIS exposure limit.

In addition to the requirement for an immediate exit, the following actions will be implemented if airborne combustible gas levels exceed 10% of its LEL:

- All electrical equipment will be disabled or removed from the space unless certified intrinsically safe or explosion-proof for that atmosphere. Only certified equipment shall subsequently be used in the space; and
- All tools and PPE used in the space shall be of non-sparking design.

#### **3.3.b.4 Testing Equipment**

Only appropriate air monitoring equipment maintained and calibrated as described, may be used to test confined space atmospheres.

This equipment is equipped with an audible alarm system that will alert employees when a hazardous condition develops.

A designated employee is responsible for assuring the proper calibration of air monitoring equipment (even if borrowed or rented). These instruments will be calibrated in accordance with the manufacturer's guidelines. Each calibration will be recorded and the data will be made available for inspection for a period of 1 year after the last calibration date.

#### **3.3.b.5 Test Personnel**

Only designated employees, who have been adequately trained, may use test equipment for the purposes of this program. A list of qualified personnel and their respective level of training is maintained by the Director or his/her designee.

#### **3.3.b.6 Pre-Entry Testing**

A pre-entry test will be made from outside the space(s) as well as the area surrounding the space(s) not more than 30 minutes prior to the time of entry and shall be recorded on the permit entry form.

#### **3.3.b.7 Repeat Testing**

A repeat test will be made and recorded on the entry permit in any of the following circumstances:

- At mid-shift if the space is being continuously occupied;
- Each time the space is vacated for 30 minutes or more (e.g., lunch break) and then re-entered;
- Each time a chemical compound, such as a solvent or other source of air contamination, is introduced into the space or identified as a result of field activities;
- Upon the request of any person occupying or about to enter the space; or
- Where there is insufficient historical data of the air quality within the space.

#### **3.3.c Ventilation**

Ventilation is the primary method of protection against a hazardous atmosphere, and is mandatory for confined space entry. Natural ventilation may be sufficient in many cases but mechanical (i.e., powered) ventilation may also be required.

### 3.3.c.1 Natural Ventilation

Prior to entry, all confined spaces will be opened to the maximum feasible extent to allow for as much air exchange between the external and internal confined space environment as is possible.

### 3.3.c.2 Mechanical Ventilation

#### (i) Powered Ventilation

The safety controls established by this program have been designed in such a manner so as to control atmospheric hazards through forced-air ventilation and does not constitute elimination of the hazard. [29 CFR 1910.146 (e)(5)]

Powered ventilation will be used if any of the following situations occurs:

- Testing indicates any deviation from normal conditions, such as any oxygen concentration less than or equal to 19.5% or greater than or equal to 23.5%; any positive indication of combustible gas greater than or equal to 10% of its lower exposure limit (LEL);
- Any unusual atmospheric conditions, such as unusual odors, unusual temperatures, etc.;
- Any cleaning compounds, solvents or other chemicals used inside the space (see Hazard Communication Program for specific information on the safe use of chemicals or products that contain chemicals);
- Symptoms associated with being in the space are experienced by entrants (e.g., dizziness, nausea, headache, weakness, etc.);
- Natural ventilation is not possible or feasible;
- Hot work is performed within the space; or
- Where toxic atmospheres are produced as part of a work procedure such as welding or painting.

#### (ii) Powered Ventilation Methods

The preferred method of powered ventilation is to provide fresh air into a space using a flexible duct hose attached to an electrically powered blower. The duct end should be directed toward the areas where personnel will be working. Another acceptable method includes using portable fans directed into the space, or a compressed air line used to introduce air into the space. Whenever air is forced into a space, the quality of the supply air source must be checked. **Note:** Compressed air from an oil-lubricated compressor is not an acceptable method for ventilating a space unless the compressor has a high-temperature alarm or carbon monoxide alarm. Compressed air from an oil-less compressor may be used if approved by the Director.

### **3.3.c.3 Continuous Ventilation**

Ventilation (natural, powered or both) will be continuous while an entry is in progress.

### **3.3.c.4 Air Flow Measurements**

When a ventilation system is operational, air flow directional indicators will be used to ensure that the system remains operational.

### **3.3.d Isolation**

Prior to confined space entry all potential health and safety hazards will be isolated from the permit-required confined space.

### **3.3.e Lock-Out**

Kent County Department of Aeronautics will ensure that mechanical and electrical hazards have been locked-out/isolated before confined space entry is made.

### **3.3.f Personal Protective Equipment**

Personal Protective Equipment (PPE) may be necessary if ventilating equipment and/or work practices are not adequate or feasible for a particular space. PPE available for use is as follows:

- Half face, negative pressure air-purifying respirators (at the exposure limit or less);
- Safety harness (chest and full body);
- Life-lines; and
- Tripod, winch, fall arrest systems.

To facilitate rescue, retrieval systems will be installed and will be utilized whenever an employee enters a permit-required confined space (without a ladder present) unless the retrieval equipment would increase the risk of injury and would not contribute to rescue efforts. Retrieval systems will consist of a chest or full body harness with a retrieval line attached at the center of the entrant's back near shoulder level, or above the entrant's head. The other end of the retrieval line will be attached to a mechanical device or fixed point outside the permit space. A mechanical device will be available to retrieve personnel from vertical type permit spaces more than five (5) feet deep indoors or more than ten (10) feet deep outdoors (as during construction activities such as trenching).

### **3.3.g Lighting**

If the available lighting is inadequate for the work to be accomplished in a confined space, intrinsically safe auxiliary lighting equipment will be used. When auxiliary lighting is used, supplemental lighting (approved intrinsically safe flashlights or lanterns) will be carried, if necessary, to safely evacuate the space in the event of auxiliary lighting failure.

### **3.3.h Non Rescue & Emergency Equipment**

Department of Aeronautics employees are trained in non-entry emergency response procedures only. This equipment includes full-body harnesses, retrieval systems, first aid and CPR equipment, etc.

### 3.3.i Attendants

An Attendant(s) will be stationed outside a permit space at all times while Entrants are within a space.

### 3.3.j Training

Each person with an active role in a permit space entry will be trained and know his or her responsibilities prior to participating in confined space work.

### 3.3.k Rescue & Emergency Response

Employees with active roles in permit required confined space entry will know the procedures for summoning and conducting non-entry rescue and emergency services.

## 4 **ALTERNATE ENTRY (PERMIT SPACES - ATMOSPHERIC HAZARDS ONLY)**

If it is determined that the only hazard in a confined space is an actual or potential hazardous atmosphere, the Entry Supervisor or entrant will verify that the only hazard is an actual, natural or potential hazardous atmospheric condition and that natural and/or continuous forced air ventilation alone is sufficient to maintain safe entry conditions. A typical example of an alternate entry confined space are inactive (new) manholes being entered for the first time.

### **4.1**

If the Entry Supervisor or Entry Personnel must enter the space to verify the hazards, the entry will be performed in accordance with permit required confined space entry procedures.

### **4.2**

Copies of this documentation are available to each employee who enters the space upon request.

### **4.3**

Entry Personnel under the direction of an Entry Supervisor will perform the following procedure prior to each entry into a space:

- All conditions making it unsafe to remove an entrance cover will be eliminated before the cover is removed.
- The opening will be guarded if necessary to prevent employees from falling through the opening and to protect Entrants from objects falling into the space.
- Direct reading air monitoring equipment will be used outside of the space to measure the oxygen content; flammable gases and vapors; and other potential toxic air contaminants. Periodic monitoring of the space will be completed to assure that conditions do not change. If a hazardous atmosphere is detected during entry, employees will immediately evacuate the space. The space will be reevaluated to

determine the cause of the hazard and appropriate measures taken to protect employees during any subsequent entry.

- Natural or continuous forced air ventilation will be used prior to employee entry and at all times while employees are in the space. The air supply will be from a clean source and directed to areas of the space where employees will be working.
- Entry into these confined spaces will not require a permit or the use of an Attendant, unless an initial entry of the confined space is necessary to obtain information. If it becomes necessary to enter the space to perform an inspection and air monitoring, then the space will be considered a permit-required confined space. Entry into this space will be performed in accordance with **Section 3.0** of this program.

## **5 NON-PERMIT CONFINED SPACES**

If it is determined that a space meets the definition of a confined space but does not present engulfment hazards from bulk materials, does not have inwardly converging walls or a floor which tapers to a small cross section, does not contain a heat stress hazard, or contains no other recognized safety hazards, the following procedure will be implemented by the Entry Supervisor. Typical examples of non-permit confined spaces are inactive (new) manholes, air handling units, elevator pits, pipe chases, sweeper.

### **5.1**

The Entry Supervisor will verify that a comprehensive hazard assessment has been performed and that all hazards have been eliminated.

### **5.2**

If the Entry Supervisor must enter the space to verify the hazards, entry will be performed in accordance with a permit-required confined space.

### **5.3**

The Entry personnel, under the direction of an Entry Supervisor, will perform the following procedures prior to each entry into the space:

- All conditions making it unsafe to remove an entrance cover will be eliminated before the cover is removed.
- The opening will be guarded, if necessary, to prevent employees from falling through the opening and to protect Entrants from falling objects.
- Natural or continuous forced air ventilation will be used prior to employee entry and at all times while employees are in the space. The air supply shall be from a clean source and directed to areas of the space where employees will be working.
- Attendant, unless an initial entry of the confined space is necessary to obtain information. If it becomes necessary to enter the space to perform an inspection and air monitoring, the space must be considered a permit-required confined space. Entry into this space must be performed in accordance with this program.

## 6 TRAINING

Entering permit-required confined spaces is a team effort. An Entrant is the individual who will actually enter a space to perform a work related task. The equipment needed to complete the task, the retrieval equipment, and any respiratory equipment which may be required have been carefully selected to complete the task as carefully and expeditiously as possible.

This section defines the various employee classifications and their corresponding level of training.

### ***6.1 Levels of Training***

An Entrant is an individual who has been trained to enter a permit-required confined space.

Training for an Entrant includes:

- The hazards associated with a space. Each Entrant has been informed of potential hazards and the associated administrative/engineering controls which can be used to minimize the potential hazards;
- Recognizing symptoms or behavioral effects of exposure to potential physical and/or chemical agents in a space;
- Training in the appropriate use of safety and personal protective equipment for safe entry into a space;
- Ensuring that communications are maintained with the attendant;
- Alerting the Attendant whenever the potential for a hazardous or prohibited condition exists; and
- Exiting the space as quickly as possible whenever an order to evacuate has been given by the Attendant or a hazardous condition exists.

An Attendant is an individual who has been trained to observe, maintain communication, and recognize symptoms of overexposure in an Entrant. Under no circumstances is this person permitted to enter a space while functioning as an Attendant. Specific duties of an Attendant include:

- An Attendant will know the hazards of a particular space.
- An Attendant will recognize behavioral symptoms of chemical exposure.
- An Attendant will maintain communication and a count of Entrants.
- An Attendant will alert Entrants in the event of a hazardous condition.
- An Attendant will remain outside the space to monitor conditions both inside and outside the space. (The Attendant is not permitted to perform other duties and shall not leave his/her station until relieved by another qualified Attendant.)
- An Attendant will be familiar with retrieval equipment and space conditions in the event of a non entry rescue.

The Entry Supervisor has the overall responsibility for assuring that the provisions of the standard and guidelines of this policy are satisfied. The Entry Supervisor approves all entry procedures and is responsible for the overall safety of the Entrants inside a permit-required confined space.

Specific responsibilities of the Entry Supervisor include:

- The Entry Supervisor will know and be able to recognize the hazards of the space for which approval has been given.
- The Entry Supervisor will assume full responsibility for the safety of the Entrants.
- The Entry Supervisor will verify that all conditions are as stated on the permit and that the atmosphere in the space has been tested and the results are accurate.
- The Entry Supervisor will assure that all personnel are trained and rehearsed in their respective roles in the event of an emergency retrieval.
- The Entry Supervisor will assure that engineering controls utilized for entry into a confined space are adequate and functioning properly.
- The Entry Supervisor is responsible for assuring that PPE and retrieval equipment are adequate for a space.
- The Entry Supervisor is responsible for assuring that all equipment with hazardous energy sources have been isolated and properly tagged.
- In the event of an emergency, the Entry Supervisor is responsible for assuring that the proper response and retrieval procedures are initiated.

Initial and refresher training will be provided to each employee classified as an Entry Supervisor, Attendant, or Entrant.

Initial training will include the following topics:

- Retrieval equipment;
- Air monitoring equipment;
- Hazardous atmospheres;
- Physical hazards;
- Types of confined spaces;
- Personal protective equipment;
- Hazardous energy and Lockout/Tagout procedures;
- Responsibilities of the various assignments;
- Standard operating procedures; and
- Engineering controls.

Refresher training will be provided once per year to each individual who may be assigned one or more of the responsibilities of a confined space entry described above. Attendees will demonstrate an understanding of the topics presented in the initial training course by successfully completing and passing a written examination.

## **6.2 Training Records**

Documentation of training will be maintained for each employee receiving initial and refresher training for the position(s) for which they are qualified to be assigned.

# **7 SPECIAL CONDITIONS**

## **7.1 Vertical Entry into a Confined Space**

Any and all vertical entries (i.e. a vertical descent of five (5) feet or more or a four (4) foot excavation) into a confined space in which there is no other route of egress such as a fixed ladder, or ladder which extends out of the hole, requires fall protection equipment. Additionally, an Attendant is required to manage the retrieval system. Required PPE will include a hard hat and safety glasses.

## **7.2 Engulfment Hazards**

If loose materials (water, soils, products, etc.) cannot be eliminated or removed prior to entry, the following changes and modifications in PPE and procedures will be implemented:

- Each team member will inspect an excavation or trench each day for the purpose of detecting slides or cave-ins (follow MIOSHA Part 9 – included as Appendix D);
- The Entrant must wear fall protection equipment (i.e. a full-body harness (ANSI Class III, OSHA (proposed) Type 1)), and a retractable lifeline;
- An Attendant will be stationed at the point of access with the primary responsibility of observing and communicating with the authorized Entrant(s). In addition, the Attendant will be responsible to monitor any water removal equipment being used;
- Another method of communication must be provided for Attendants and Entrants when natural voice communication becomes inadequate;
- A retrieval apparatus and additional person(s) to help in retrieval, as necessary, will be available in the event person(s) who entered are unable to exit the space unassisted; and
- See back.

## **7.3 Hot Work in a Confined Space**

If hot work is required in any confined space, the following is required:

- Entry Permit;
- Hot Work Permit;
- Ample fire protection equipment;
- Continuous air monitoring;
- Removal of all combustibles at least 35 feet from the work area. If removal isn't feasible, then all combustible materials must be covered by metal or flame-proof covers; and

- Mechanical (i.e., powered) ventilation will be required to cool the space to ambient conditions. **Under no circumstances** are pressurized sources of pure oxygen (i.e., welding cylinders) to be used for ventilation.

## 8 EMERGENCY & RESCUE

Entry of a confined space for rescue or other emergency purposes shall be made only by trained off-site emergency rescue personnel. Kent County Department of Aeronautics personnel are permitted to attempt non-entry rescue in the case of an emergency. However, under no circumstances are personnel to enter a confined space for the purposes of search and rescue.

## 9 ROLES & RESPONSIBILITIES

### 9.1 *Duties of Authorized Entrants*

Employees authorized to enter confined spaces will:

- Know the hazards which may be encountered during entry including the means, symptoms, and consequences of exposure;
- Properly use the equipment appropriate to the entry;
- Communicate with the Attendant and enable the Attendant to alert Entrants of the need to evacuate the space if necessary;
- Alert the Attendant whenever there is a hazardous condition, and/or a prohibited condition; and
- Exit from the permit space as quickly as possible whenever (I) the order to evacuate is given by the Attendant; (ii) a hazardous condition is detected or air monitoring detects an oxygen deficient or enriched environment; (iii) combustible gases of at least 10% of the LEL or greater are present; or (iv) airborne contaminants are in excess of MDCIS/OSHA regulated limits.

### 9.2 *Duties of Entry Supervisors*

Employees designated as Entry Supervisors are personnel who have been properly trained and are responsible for:

- Knowing the hazards which may be encountered during an entry including the means, symptoms, and consequences of exposure;
- Determining safe entry, completing entry permits and identifying when to terminate entry and cancel a permit;
- Verifying, prior to authorizing the entry, that all appropriate entries have been made on the permit, that all tests specified by the permit have been conducted and that all procedures and equipment specified in the permit have been implemented, are present, and are operational;
- Terminating the entry and canceling the permit as necessary;
- Verifying that additional rescue services are available;
- Prohibiting unauthorized personnel from entering a space; and

- Determining that entry operations remain consistent with the terms of the entry permit and that acceptable entry conditions are maintained.

### **9.3 Duties of Attendants**

Employees designated as Attendants have been trained to:

- Know the hazards associated with a particular space;
- Be aware of possible behavioral effects of hazard exposure (including heat stress) in authorized Entrants;
- Maintain a continuous count of employees within the permit space and assure that each Entrant's name is listed on the permit;
- Remain outside the permit space until relieved by another Attendant;
- Routinely communicate with Entrants, monitor their status, and if necessary order them to evacuate;
- Monitor conditions both inside and outside the space to ensure the safety of Entrants and to order immediate evacuation whenever (i) a prohibited condition is detected; (ii) the authorized Entrant exhibits behavioral effects of overexposure; (iii) a condition arises outside the space which could endanger the Entrants; or (iv) the Attendant can no longer perform all duties prescribed by this section;
- Summon rescue and/or emergency help whenever Entrants need assistance to escape;
- Warn unauthorized persons away from the permit space, instruct unauthorized persons who may enter the confined space to exit immediately, and inform the authorized Entrants and Entry Supervisor of such entry;
- Perform no other duties which may interfere with the primary duty of monitoring and protecting authorized Entrants;
- Perform non-entry rescues; and
- Kent County Department of Aeronautics permits personnel to act as Attendants for more than one permit-required confined space at a time provided they can perform all of the above duties for each space being attended.

## **10 CONTRACTOR COORDINATION**

When Kent County Department of Aeronautics subcontracts work, the Director and/or Project Managers will notify all on-site subcontractors of the requirements of this confined space entry program and, if required, shall make a copy of the program available in accordance with 29 CFR 1910.146(c)(8). The subcontractor will provide a copy of their written confined space entry program to the Director for coordination purposes.

Additionally, the following information will be provided to the subcontractor:

- Hazards identified with a specific permit-required confined space;
- Kent County Department of Aeronautics' experience with a particular space that makes the space in question a permit-required confined space;
- Precautions or procedures that have been implemented for the protection of employees in or near permit spaces where contractor personnel will be working;

- Coordination of entry operations when working in or near permit spaces; and
- Debriefing at the conclusion of the entry operations.

## 11 REVIEW & ENFORCEMENT

The provisions of these procedures will be reviewed by the Director and/or his/her designee on an annual basis and updated whenever there is reason to believe that the measures taken under this procedure may not protect employees.

Circumstances requiring a review include:

- Any unauthorized entry of a space;
- Detection of hazards;
- Detection of a condition prohibited by an entry permit;
- The occurrence of an injury or near-miss during entry;
- A change in the use or configuration of a space;
- Employee reports of non-compliance with this procedure; and/or
- Supervisor reports of non-compliance with this procedure.

The Director and/or his/her designee and project managers share the responsibility for enforcing the confined space policy and procedures.

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***Confined Spaces***  
***Kent County Department of Aeronautics***  
***Gerald R. Ford International Airport***

<b>CLASSIFICATION</b>	<b>NO.</b>	<b>GROUND S I.D.</b>	<b>LOCATION</b>
P	2	Electrical Vaults	Various Locations on Department of Aeronautics
P	1	Sanitary Manholes and Sanitary Pump Stations	Various Locations on Department of Aeronautics
P	Many	Stormwater Drains and Manholes	All Fields
P		Stormwater Drains with Glycol	
P	Many	Water Valve Manholes Irrigation Pits	Various Locations (including Oostema Blvd)
NP	5	Air Handlers AHU B1 - B6	Concourse B
NP	3	Air Handlers AHU A1 - A3	Concourse A
NP	6	Air Handlers AHU 1-6	Main Terminal
NP (Fall Protection)		Elevator Room-Sump Pit	Main Terminal
NP		Pipe Chase	1 Door on each Terminal Level
NP		Heavy Equipment Hoist Pit	Maintenance Building
NP		V-Bottom Sanders	Heavy Equipment
NP		Sweeper	Heavy Equipment
NP		Air Handler	Maintenance Building
NP		Electrical Vaults	Main Terminal
P - Permit, NP - Non-Permit			

The Kent County Department of Public Works (DPW) maintains the lift stations on the east side of the tunnel. Any entry into these spaces will be in accordance with the DPW Confined Space Entry Program.

**Kent County**  
**Department of Aeronautics**  
**FALL PROTECTION PROGRAM**

---

## **1 PURPOSE**

It is well recognized that falls are the second leading work-related cause of death and serious injuries in the workplace. While Kent County makes every effort to reduce this risk, it is often necessary to provide employees with personal fall protection equipment.

Kent County Department of Aeronautics provides the following Fall Protection Policy in accordance with Michigan Department of Labor and Economic Growth (MDLEG) formerly MIOSHA regulations, Part 45 and the OSHA revised standards on fall protection, subpart M. (See Appendix E).

## **2 FALL PROTECTION REQUIREMENTS**

When planned or unplanned work activities are performed at heights equal to or greater than six feet, and no other safety devices such as safety nets or perimeter guard rails are available or in place, Kent County Department of Aeronautics personnel are required to utilize personal fall protection equipment.

## **3 FALL PROTECTION EQUIPMENT**

### ***3.1 Requirements***

The following fall protection equipment represents the minimum equipment requirements for all employees when working at heights equal to or greater than 6 feet:

- A full-body harness meeting the certification requirements of ANSI standard A10.14-1975; *body belts are not acceptable.*
- Lanyards and vertical life lines must have a minimum breaking strength of 5,000 pounds.
- Personal fall arrest systems when stopping a fall must limit the maximum arresting force on the worker to 1,800 pounds when used with a body harness.

### ***3.2 Inspection***

All fall protection equipment must be inspected before each and every use. Each full-body harness, safety line, and safety strap will be inspected for abrasion and kinks. All locking "D" rings will be inspected for cracks, wear or any other damage. Any equipment which is found to be damaged will be immediately removed from service and the Supervisor will be notified.

Any equipment which, has been subjected to in-service loading (i.e. prevented the fall of an employee) must be immediately removed from service, tagged as "defective" and not be used again for employee safeguarding.

Any equipment, which has been exposed to chemicals, run over sharp corners, used when frozen, left in freezing temperatures when wet, or exposed to sources of flame will be immediately removed from service.

### ***3.3 Storage***

All equipment is stored in a location free from chemicals, excessive heat and moisture.

## **4 EMPLOYEE EDUCATION AND TRAINING**

### ***4.1 Method and Content***

Education and training is provided for each employee required to wear and use personal fall protection equipment. The education and training program includes:

- Availability of equipment;
- Purpose of equipment;
- Procedures for identifying/selecting the appropriate fall protection equipment for the assigned job;
- How to properly don, doff, adjust and use the equipment;
- Limitations of the equipment;
- Proper care, inspection, cleaning, maintenance, and storage of personal fall protection equipment; and
- Measures to take when the equipment becomes defective.

### ***4.2 Employee Competency***

Employees will not be considered competent in equipment use until they are able to demonstrate competency in the following:

- Knowledge and understanding of this program;

- Knowledge and understanding of the reasons for the provision and use of personal fall protection for a particular job;
- Donning personal protective equipment;
- Doffing personal protective equipment; and
- Knowledge and understanding of the limitations associated with specific personal fall protection equipment.

Unless employees demonstrate an ability to use and select the appropriate equipment, they will not be permitted by Kent County to perform any work activities which require the use of fall protection.

Written certification records verifying compliance with training requirements are maintained by the Supervisor.

### ***4.3 Schedule***

Education and training will be provided to employees:

- When personal protective equipment is initially issued;
- Upon review of accident report(s) which necessitate training/retraining;
- When the type of personal fall protection equipment changes; and
- When there is reason to believe that any affected employee who has already had training does not demonstrate an understanding or basic knowledge/competency of this policy and fall protection equipment.

## **5 ADMINISTRATIVE RESPONSIBILITY**

### ***5.1 Division Supervisor***

Each Division Supervisor is responsible for:

- Periodically evaluating and if necessary modifying or updating this Fall Protection Program;
- Assessing the effectiveness of personal fall protection equipment;
- Providing employee training in the use and limitations of fall protection equipment; and
- Maintaining written certification of training records.

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# ***Kent County***

## **DEPARTMENT OF AERONAUTICS**

### **HEARING CONSERVATION PROGRAM**

---

#### **1 PURPOSE**

The purpose of this *Hearing Conservation Program* is to protect all Kent County Department of Aeronautics employees from occupational noise induced hearing loss through the use of engineering controls, sound work practices, and personal protective equipment.

Kent County Department of Aeronautics provides the following hearing conservation program for its employees in accordance with (i) Michigan Department of Labor and Economic Growth - Public Health Rules Part 380; and (ii) Federal OSHA Standard 29 CFR 1910.95.

#### **2 DEFINITIONS**

**Action Level** - An eight hour, time-weighted average noise exposure of 85 decibels measured on the A-scale, slow response, or equivalently a dose of fifty percent.

**Audiogram** - A chart, graph, or table resulting from an audiometric test showing an individual's hearing threshold levels as a function of frequency.

**Baseline Audiogram** - Initial audiogram against which future audiograms are compared.

**Decibel or dB** - A unit of measurement of sound pressure level.

**Representative Exposure** - The measurement of an employee's noise dose or eight hour, time-weighted average noise exposure that the employer deems to be typically equivalent of the exposures of other employees in the workplace.

**Sound Level** - Ten times the common logarithm of the ratio of the square of the measured A-weighted sound pressure to the square of the standard reference pressure of 20 micropascals and is expressed in units of dBA.

**Standard Threshold Shift** - A change in the hearing threshold relative to the baseline audiogram of an average of 10 dB or more at 2000, 3000, and 4000 Hz in either ear.

**Time-weighted Average Sound Level** - Sound level which, if constant over an eight hour exposure, would result in the same noise dose as is measured.

### **3 EMPLOYEE EXPOSURE ASSESSMENT**

An employee exposure assessment was performed on July 21, 2003 when it was reasonably anticipated that employees may be exposed to noise in excess of the MDCIS action level of 85 dBA. This and each employee exposure assessment will include:

#### ***3.1 General Area Sound Level Measurements***

To identify work tasks or work areas managed by Kent County Department of Aeronautics where it is reasonably expected that sound pressure levels may exceed the MDLEG action level of 85 dBA, a general noise survey will be performed.

#### ***3.2 Employee Exposure Monitoring***

Representative personal exposure monitoring will be performed in the hearing zone of employees when it is reasonably expected that job tasks or work areas may expose employees to sound pressure levels in excess of an eight hour time weighted average of 85 dBA.

#### ***3.3 Frequency of Noise Measurements***

Additional periodic noise measurements will be performed:

- Annually and only if site/facility or operations/tasks are extended in duration;
- Within 30 days of any change in work practices, processes, equipment, controls, or personnel assignment which may result in a new or additional noise exposures equal to or in excess of a Time Weighted Average (TWA) of 85 dBA and only if operations/tasks are extended in duration; or
- If it is suspected that the attenuation provided by personal protective equipment (foam ear plugs, ear muffs, etc.) may be inadequate.

#### ***3.4 Employee Participation, Observation, and Notification***

Employees are permitted to observe and participate in hearing conservation and exposure monitoring activities.

Upon completion of an exposure assessment, employees will be provided results of the noise exposure assessment within seven (7) working days of report receipt.

### **4 NOISE EXPOSURE CONTROLS**

To control potential employee noise exposures, Kent County Department of Aeronautics, when feasible, will implement engineering, personal protective equipment, and educational exposure control measures.

## ***4.1 Engineering Controls***

Every effort will be made to control noise at its source. Methods and efforts will be evaluated and documented on a continued basis.

When specifications, recommendations, and efforts to control noise at its source fail to reduce sound pressure levels to acceptable levels, engineered exposure controls will be researched and when feasible, implemented. Methods and efforts will be evaluated and documented on a routine basis.

## ***4.2 Personal Protective Equipment***

When engineering and administrative controls cannot reduce employee exposures to acceptable levels, hearing protectors will be issued at no cost, to all employees exposed to sound pressure levels at or above the action level of 85 dBA. This hearing protection will attenuate all employee exposures to less than the action level.

Kent County Department of Aeronautics, through an effective training program, ensures that hearing protectors are fitted correctly and worn by:

- Employees exposed at or above the current permissible exposure level (PEL);
- Employees who are exposed at or above the action level but less than the PEL and who have not yet had a baseline audiogram or have experienced a standard threshold shift (STS);
- Employees who make a request for hearing protectors.

## ***4.3 Education***

Kent County Department of Aeronautics believes that the best exposure control and ear protection is achieved when employees are educated and trained; therefore an education and training program is provided for all employees. By providing education and training programs during the annual training program, all employees are assured of participating in this program.

Education and training programs are provided annually and all information is reevaluated and updated as necessary.

Kent County Department of Aeronautics' education and training program includes:

- Effects of noise on hearing;
- Typical work areas and equipment that may exceed the MIOSHA action and/or permissible exposure levels;
- Work practices and techniques which, if implemented, may reduce noise exposure levels;
- The purpose of hearing protection and how to obtain, select, and fit the devices properly; and
- MDLEG rules and regulations including Appendices.

## 5 AUDIOMETRIC TESTING

Kent County has implemented, at no cost to employees, an audiometric testing program for those employees who will be exposed to noise levels greater than 85 dBA for extended projects. Only audiometric testing consultants who satisfy MDLEG standard have been and will be utilized.

### ***5.1 Baseline Audiograms***

Baseline audiometric testing has been provided for all affected employees by a licensed, certified audiologist/technician; and within six months of employment, all new employees with potential exposures at or above the action level will receive a baseline audiogram.

When a baseline audiogram is performed, employees will:

- Wear hearing protection at least fourteen hours prior to testing (if subjected to excessive noise levels) to prevent noise exposure; and
- Be notified of the need to avoid excessively high levels of non-occupational noise during the fourteen hour period immediately preceding the audiometric exam.

### ***5.2 Schedule***

Audiometric testing by certified, qualified, audiologists/technicians will continue to be made available:

- Within six months of an employee's first exposure at or above the action level; and
- Annually, once a year, for employees who continue to be exposed to occupational noise levels greater than the action level.

### ***5.3 Audiogram Evaluation***

Kent County assures that each employee's annual audiogram will be compared to the employee's baseline audiogram to determine if the audiogram is valid and if a Standard Threshold Shift (STS) has occurred.

If a STS has occurred, a retest will be obtained within 30 days (the retest will be considered the annual audiogram).

If problem audiograms are referred to an audiologist, otolaryngologist, or physician, Kent County will provide the physician with the following information:

- Hearing Conservation Rules and Regulations;
- Baseline audiogram(s) and the most recent audiogram for the employee to be evaluated; and
- Measurements of background sound pressure levels in audiometric test rooms/booths and records of audiometer calibrations as obtained from the audiometric testing group.

### ***5.4 Follow-Up Procedures***

If a STS has occurred, Kent County will assure that the following occurs:

- The affected employee will be informed in writing, within 21 days of the determination;
- Employees not utilizing hearing protection will be fitted with hearing protectors, trained in their use and care, and will be required to use them. These hearing protectors will attenuate sound pressure levels to less than the action level;
- Employees already utilizing hearing protection will be refitted and retrained in the use, and care of hearing protectors. If necessary, hearing protection, offering greater attenuation, will be provided;
- If additional testing is necessary or if it is suspected that hearing protectors could be causing the problem, employees experiencing a STS will be referred for a clinical audiological evaluation; and
- If it is suspected that the medical pathology of the ear is unrelated to the use of hearing protectors, the employee will be informed of the need for an otological exam.

If subsequent audiometric testing of an employee, whose noise exposure is less than the eight hour Time Weighted Average (TWA) of 90 dBA indicates that a STS is not persistent, Kent County will inform that employee of the new audiometric determination and will discontinue the required use of hearing protectors.

### ***5.5 Revised Baseline Audiograms***

An annual audiogram may be substituted for a baseline audiogram when, in the judgement of the audiologist, otolaryngologist, or physician who is evaluating the audiogram, the standard threshold shift in the annual audiogram is persistent or the hearing threshold indicates significant improvement over the baseline audiogram.

## **6 RECORDKEEPING**

All records pertinent to occupational noise exposures and monitoring, and audiometric testing are maintained by Kent County Department of Aeronautics and include the following:

### ***6.1 Employee Audiograms***

Accurate and complete audiograms are maintained by the personnel department and include:

- Employee name and job classification;
- Date of the audiogram;
- Examiner's name and employer;
- Date of last acoustic or exhaustive calibration of the audiometer; and
- Employee's most recent noise exposure measurement.

Records are maintained of the background sound pressure levels in the audiometric test rooms (as provided by the testing group).

## ***6.2 Employee Exposure Assessments***

All noise exposure measurements (general area sound level survey and employee exposure monitoring) are maintained.

## ***6.3 Retention, Access, and Transfer of Records***

- Noise exposure measurements are retained for two years.
- Audiometric test records are retained for the duration of an employee's employment.
- All records will be provided upon request, to employees, former employees, representatives designated by an individual, and MDLEG officials.
- If in the event Kent County ceases to do business, all pertinent records required to be maintained will be transferred to the succeeding employer.

# **7 PROGRAM REVIEW AND EVALUATION**

## ***7.1 Noise Controls***

Methods and efforts to control noise and seek engineering solutions are evaluated and documented on a routine and continued basis.

## ***7.2 Hearing Conservation Program***

A comprehensive review of the Hearing Conservation Program is performed once a year. Any document changes or revisions will be appropriately documented.

# **8 PROGRAM ENFORCEMENT**

Supervisors are responsible for the enforcement of the Hearing Conservation Program.

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# ***Kent County***

## **DEPARTMENT OF AERONAUTICS**

### ***HOT WORK OPERATIONS - FIRE PREVENTION AND PROTECTION***

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#### **1 PURPOSE AND SCOPE**

The purpose of this policy is to establish a program and implement standard operating procedures for preventing loss of life and property by minimizing the risk for fire and/or explosion hazards during hot work operations. Kent County Department of Aeronautics has implemented this policy to ensure that employees, prior to initiating hot work, perform the necessary work area inspections, retrieve the appropriate work and safety equipment, and complete all applicable permits. This procedure applies to all welding, cutting, and brazing operations conducted outside designated maintenance hot work areas.

This policy provides a written program in accordance with OSHA 29 CFR 1910.252 for hot work operations - prevention and protection, MIOSHA Part 12.

#### **2 DEFINITIONS**

**Combustible Materials** - Any materials which can be readily ignited and sustain a fire.

**Confined Space** - Any space which is (i) large enough and so configured that an employee can physically enter and perform work; (ii) has limited or restricted means for entry or exit; and (iii) is not designed for continuous employee occupancy.

**Designated Employee** - An employee who is authorized to approve hot work operations and permits.

**Fire Watch** - Procedure used to detect and identify any stray sparks, hazards, or fires created during or after hot work operations.

**Hot Work Operations** - Any county operations (i.e. riveting, welding, cutting, burning, and heating) capable of providing a source of ignition.

#### **3 APPLICATION**

The hot work policy and procedures apply to all situations, outside designated hot work maintenance areas, where county maintenance operations are capable of providing an ignition source.

### ***3.1 Hot Work Activities***

Potential maintenance activities which may provide ignition sources include but are not limited to:

- Welding
- Cutting
- Brazing
- Burning
- Heating
- Riveting

### ***3.2 Management Responsibilities***

In recognizing that management has a responsibility for developing safe hot work practices, the Division Supervisor and/or a Designee ensures that:

- Designated hot work areas are identified and delineated;
- Hot work - fire prevention and protection procedures outside designated areas are implemented;
- The supervisor or his/her designee is authorized to approve hot work operations in areas other than those designated;
- All employees are suitably trained in the safe operation of hot work equipment, and procedures; and
- All outside contractors are advised of flammable materials or hazardous conditions of which they may not be aware.

### ***3.3 Designated Employee***

Only a designated employee, i.e., Supervisor, is authorized to approve hot work operations in areas outside designated areas. Additional designated employee responsibilities include:

- Inspecting the proposed work area with the employee performing hot work;
- Ensuring the employee(s) perform the hot work task, follow all necessary precautions, and utilize all required fire preventive, safety and personal protective equipment;
- Ensuring that the sprinkler system, where available, is operational;
- Suspending all activities which could be unsafe during hot work operations;
- Suspending hot work operations in the event that operations, equipment, or changes in the work environment could lead to unsafe conditions; and
- Reviewing and signing hot work permits.

### ***3.4 Exempt Operations***

This policy does not apply to hot work operations performed in designated maintenance areas. However, without exception, all rules governing hot work as published in OSHA Welding, Cutting, and Brazing standard 29 CFR 1910.252 MIOSHA Part 12 and MIOSHA Occupational Health Rules 3240 must be implemented in designated areas.

## 4 PERIODIC INSPECTIONS

Periodic inspections will be performed at least annually to ensure that the hot work - fire prevention and protection policy procedures and requirements are being followed.

Annual inspections will be on unannounced days and shifts and shall include:

- Whether steps in the policy are being implemented;
- Whether county personnel know their responsibilities under this standard operating policy;
- Whether these procedures are adequate enough to provide the necessary protection; and what changes, if any, are needed.

Inspections will be conducted by a person who is not directly responsible for the supervision of the inspected work area.

All persons involved in the work assignment will be identified, including persons in the affected work area and the person conducting the inspection. The inspection report will also include the date, work area, and any resulting corrective action and will be retained in the files for a period of one year.

## 5 TRAINING

Initial hot work - fire prevention and protection training activities will be provided to all county maintenance personnel and will include:

- The purpose and use of hot work - fire prevention and protection procedures;
- Recognizing and understanding potential hazardous situations;
- The proper means and methods for control of hot work operations; and
- The limitations of fire prevention/protective, and personal protective equipment.

New employees will receive training during their initial orientation employment period. Refresher training will be provided:

- Annually;
- If an audit reveals a need for immediate training;
- If there is a change in personnel, county procedures, or hot work operations; or
- If an employee injury or facility damage results from improper hot work procedures.

The Director and/or designee is responsible for maintaining a list of all personnel trained in hot work - fire prevention and protection policy and procedures.

## 6 POLICY PROCEDURES

### ***6.1 Work Area Preparation***

Prior to obtaining a hot work permit, employees performing hot work operations are responsible for notifying ARFF and performing the following procedures:

- All movable fire/combustible hazards must be removed from the area and taken to a safe place (at least 35 feet away). All combustible materials (paper clippings, wood shavings, etc.) on any floor surfaces must be swept clean for 35 feet around the hot work operation;
- In situations where fire/combustible hazards cannot be removed, adequate guarding, which will confine sparks, heat and slag to the work area, must be installed. Additional heat, flame, and spark resistant guarding must be placed around the combustible materials. Combustible flooring materials must be kept wet, covered with wet sand, or protected with fire resistant shielding;
- All floor, wall, and door openings must be adequately protected to prevent stray sparks from leaving the work area;
- Fire watchers (ARFF) must be established in areas where (i) other than a minor fire may develop, (ii) combustible building materials or contents which cannot be removed are closer than 35 feet to the point of hot work operations, (iii) combustible materials are present further than 35 feet away but are easily ignited, (iv) wall, door, or floor openings within 35 feet may expose combustible materials to hot work operations, or (v) combustible materials are adjacent to metal partitions, walls, ceilings, or roofs and are easily ignited by radiant heat.
- Fire watchers must watch for fire in all exposed areas, try to extinguish fires within the capability of existing equipment, or otherwise sound the fire alarm. The watch must be maintained for at least 30 minutes after hot work operations have ceased.
- Suitable personal protective equipment, appropriate for the work, must be available for use.

Once the work area has been prepared, the employee may complete the hot work permit. However no work can begin until the permit has been authorized and has been signed by the designated employee.

## ***6.2 Work Area Inspection***

Prior to authorizing hot work, the designated employee must perform an inspection of the area where work is to be performed. The inspection, at a minimum, must include the following:

- Ensure that all combustible materials in the area are removed and/or protected as stated in section 6.1.
- Ensure that fire protection and extinguishing equipment are located in the work area;
- Ensure that where fire watches are required, they are available at the site;
- Ensure that personal protective equipment, appropriate for the work, is available for and is used by affected employees; and
- that the appropriate county personnel are notified of pending hot work activities to be performed in their respective work areas.

## ***6.3 Hot Work Permit Authorization***

Once procedures 6.1 and 6.2 have been completed, the designated employee may authorize the permit by signing it.

## **6.4 Hot Work Limitations**

Hot work operations are not permitted in the following areas:

- In areas unauthorized by management;
- In sprinklered buildings where such protection is impaired;
- In the presence of explosive atmospheres, or in areas where explosive atmospheres may develop;
- In areas where large quantities of exposed, readily ignitable materials are present; and
- In confined spaces. However hot work operations may be performed if (i) the employees are properly trained for permit-required confined space entry and attendant rescue, (ii) have completed the necessary permit-required confined space entry permit which subsequently must be approved and signed by the entry supervisor, (iii) have demonstrated competency in air monitoring techniques and attendant non-entry rescue, and (iii) entry, and space activities comply with all applicable rules and regulations as published in MIOSHA/OSHA Permit-Required Confined Spaces standard 29 CFR 1910.146, R.325.63001-49 adopted by MIOSHA.

## **7 POLICY ENFORCEMENT**

Division supervisors are responsible for enforcement of the hot work - fire prevention and protection policy. Personnel found in violation of this Policy will be subject to County of Kent Policies.

\\airport\hotwork.doc

# ***Kent County***

## ***DEPARTMENT OF AERONAUTICS***

### ***INDEX OF APPENDICES***

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***APPENDIX A***

***SELECTION, FIT, AND CARE OF RESPIRATOR EQUIPMENT***

# **SELECTION, FIT, AND CARE OF RESPIRATOR EQUIPMENT**

## **1 SELECTION OF RESPIRATOR EQUIPMENT**

### ***1.1 Air Purifying Respirators***

To ensure employee acceptance of respirator usage, factors such as comfort, ability to breathe without undue effort, adequate visibility, provisions for eyeglass wearers, ability to communicate, ability to perform required job tasks, and confidence in fit will be considered when selecting respirators for use. The following types of respirators are available when needed:

- NIOSH approved half-face, and full face air purifying respirators equipped with appropriate mechanical High Efficiency Particle Air (HEPA) filters and/or organic (chemical sorption) cartridges or canisters (e.g. Gas Masks).

Employees, without exception, should never enter a confined space with air purifying respirators. Air purifying respirators purify the air that the wearer breathes. In the event of oxygen deficient atmospheres, air purifying respirators do not provide oxygen. Only properly trained and so certified employees may enter oxygen deficient atmospheres with the appropriate self contained or supplied air breathing respirators.

## **2 PROPER FITTING AND TESTING OF RESPIRATORS**

### ***2.1 Qualitative Fit Tests***

To determine if a respirator provides an adequate fit, qualitative fit testing will be performed. Qualitative fit tests involve a test subject responding (either voluntarily or involuntarily) to a chemical outside the respirator facepiece. Currently there are three qualitative tests available to test the fit of a respirator and these include:

#### **2.1.a Irritant Smoke Test**

The irritant smoke test is performed by directing an irritant smoke<sup>1</sup>, usually stannic chloride, from a smoke tube towards the respirator being worn. Subsequently a series of tests are performed to determine if factors such as talking, grimacing, or head movement interfere with the seating and proper fit of the respirator or facepiece. If the wearer cannot detect the irritant smoke, it is assumed that a satisfactory fit is achieved.

The respirator wearer will react involuntarily, usually by coughing or sneezing, to leakage of smoke around or through the respirator. Since this is a qualitative test, the testing administrator should be interested in any employee response.

The test can be used for either air-purifying respirators or SCBA devices, however air purifying respirators should be equipped with HEPA filters.

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<sup>1</sup> Irritant smoke may irritate the eyes, skin and any exposed mucous membrane. It is important that the test subject keep his/her eyes closed during the test.

### 2.1.b Odorous Vapor Test

This test relies on the ability of the respirator wearer to detect an odorous material within the mask. The test is performed by exposing the test subject to a chamber, room, or hood containing airborne concentrations of the odorous material (usually isoamyl acetate<sup>2</sup> (banana oil)) or in some instances by introducing an odorous material around the respirator. A satisfactory fit is assumed, if the subject is unable to smell the chemical.

The test can be used for either air-purifying respirators or SCBA devices, however air purifying respirators should be equipped with organic cartridges or canisters.

### 2.1.c Taste Test

The test relies on the respirator wear's ability to detect an airborne chemical, usually sodium saccharin, by tasting it inside the respirator. The test is administered by stationing the respirator wearer within a chamber or hood and spraying, with aid of a nebulizer, the chemical into the test environment. A satisfactory fit is achieved when the wearer is unable to taste the chemical.

In order for the test to be successful, the respirator wearers should not eat, drink, chew gum or tobacco for at least 15 minutes prior to the test. Limitations of the taste test include (i) variations in taste thresholds between wearers and (ii) the test is dependent on the wearer's honest indication of taste.

The test can be used for either air-purifying<sup>3</sup> air respirators or SCBA devices, however air purifying respirators should be equipped with HEPA filters/cartridges.

## ***2.2 Field Fit testing Procedures***

Each time an air-purifying or SCBA is donned, positive and negative pressure sealing tests should be performed to assure a proper respirator fit. A positive and negative pressure test should never be substituted for qualitative fit-testing. Always follow manufacturer guidelines when donning and performing respirator fit tests (consult manufacturer's instructional booklet which should be included with each respirator).

The following procedures are recommended:

### 2.2.a Negative Pressure Test

This testing procedure can be used to test the seal and fit of air-purifying respirators and SCBA facepieces (respirators or face pieces must be equipped with tight fitting inlet covers and/or breathing tubes which can be squeezed or blocked off at the inlet). The following procedure may be used to perform a proper negative pressure test:

- Close the inlet opening of the respirator's canister(s), cartridge(s), or filter(s) by covering with the palm of one or both hands or by blocking or squeezing the inlet of the respirator facepiece (SCBA) breathing tube.

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<sup>2</sup> Isoamyl acetate as a test reagent has the following limitations (i) odor threshold varies widely among individuals, (ii) olfactory fatigue can occur (failure to detect an odor), and (iii) there is no involuntary respirator wearer reaction.

<sup>3</sup> This test may also be used to test the fit of single-use disposable dust masks/respirators.

- The wear should inhale gently and hold his breath for 10 seconds.
- If the facepiece collapses and there are no detectable air leaks into respirator, it can be assumed that the respirator is donned properly and the exhalation valve and facepiece are not leaking.

### 2.2.b Positive Pressure Test

This testing procedure can be used to test the seal and fit of respirators and SCBA face pieces equipped with both inhalation and exhalation valves. It may be impossible to test certain types of valveless and disposable respirators. The following procedure may be used to perform a proper positive pressure test:

- The exhalation valve or breathing tube must be covered and the wearer should be instructed to exhale gently.
- The respirator or face-piece is properly donned if a slight positive pressure is detected within the facepiece without the outward leakage of air between the sealing surface of the facepiece and the wearer's face.
- To successfully perform this test on certain respirators, it may be necessary to remove the exhalation valve cover from the respirator and subsequently replacing it after the test.

## ***2.3 Respirator Care***

Respirators should be cleaned after each days use or more often if necessary. The following procedures may be used when cleaning respirators:

### 2.3.a Manual Cleaning

The following procedure may be used when cleaning respirators:

- Remove all external coverings and equipment (filters, straps, valves, etc.) from the facepiece.
- Wash the facepiece in warm, soapy water and rinse thoroughly in clean water.
- Air dry in a clean place.
- When thoroughly dry, reassemble.

### 2.3.b Disinfection

Disinfection is required when a respirator is worn by more than one person. One of the following procedures may be used when disinfecting respirators:

- Immerse the facepiece (first remove all external coverings and equipment) for two minutes in a bleach solution (2 ml bleach per 1 liter water). Afterwards rinse and thoroughly dry.
- Immerse the facepiece for two minutes in a solution of iodine (0.8 ml tincture of iodine in 1 liter of water). Afterwards rinse and thoroughly dry.

- Purchase a commercially prepared disinfection solution and use according to the manufacturer's instructions.

### 2.3.c Storage

Store the respirators or facepieces in sealable plastic bags, or tight fitting plastic or metal containers. Avoid storage techniques and/or containers that may distort the facepiece.

### 2.3.d Inspection and maintenance

- **Disposable Respirators:** (i) Check for holes in the filter or damage to the sorbent (such as loose charcoal granules). Discard if damaged. (ii) Check straps for elasticity and deterioration. (iii) Check the metal nose clip for rust or deterioration.

Discard the respirator if any damage or degradation is detected during the inspection.

- **Air-purifying Respirators:** (i) Check the facepiece for dirt, pliability, deterioration, cracks, tears, and/or holes. (ii) Check straps for breaks, tears, loss of elasticity, broken attachment snaps and proper tightness. (iii) Check valves for holes, warpage, cracks, and dirt. (iv) Check filters, cartridges, and canisters for dents, corrosion, and expiration date. Check the manufacturer's instructions to ensure that the protection and limitations afforded provide the necessary or required level of protection.

Notify the supervisor of any equipment damage or degradation. Some equipment may be replaceable such as valves and straps, however discard the respirator (air-purifying only) if the facepiece is damaged.

***APPENDIX B***

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***Selection and Use of Work Practices  
1910.333***

***APPENDIX C***

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***Confined Space Entry Permit***

Permit No. \_\_\_\_\_

1.Space to be entered: \_\_\_\_\_

2.Reason for entry: \_\_\_\_\_

3. Permit Begins: Date: \_\_\_\_\_ Time: \_\_\_\_\_  
 Permit Expires: Date: \_\_\_\_\_ Time: \_\_\_\_\_

4.Air testing (prior to each entry) was performed on this date by \_\_\_\_\_ using test unit # \_\_\_\_\_, which was last calibrated on \_\_\_\_\_. The results are summarized as follows:

TIME	O <sub>2</sub> (Oxygen)	% LEL (Combustible Gas)	ppm CO (Carbon Monoxide)	ppm H <sub>2</sub> S (Hydrogen Sulfide)
Pre-entry:				
Repeat:				
Repeat:				
Repeat:				
Repeat:				

Acceptable entry conditions:

Oxygen	19.5% - 23.5%
LEL	less than 10%
CO	less than 35 ppm
H <sub>2</sub> S	less than 10 ppm

**5.Entry Supervisor's Verification Checklist**

Yes No (If question is not applicable for this entry, enter NA in the "No" column.)

- Is entry necessary?
- Has a pre-entry briefing been conducted?
- Are monitoring frequencies specified? (i.e., continuously, periodically)
- Is the oxygen concentration acceptable? (i.e., 19.5% - 23.5%)
- Are combustible gas levels acceptable? (i.e., <10% LEL)
- Are chemical contaminants below exposure limits? (carbon monoxide <35 ppm, hydrogen sulfide <10 ppm)
- Are other chemical contaminants present? List:  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_
- Has the space been ventilated?
- Is the ventilation equipment properly positioned to achieve the most efficient movement of air based on vapor density and exhaust locations?
- Will ventilation continue during entry?
- Will hot work be done as part of this entry?
- If yes, has hot work permit been completed?
- Have temperature extremes been eliminated or controlled?
- Have engulfment hazards been eliminated or controlled?
- Have slick/wet surfaces or other slip/trip fall hazards been eliminated or controlled?
- Is there adequate lighting to perform the job safely? (Note: Only confined space lighting may be used.)
- Is the entrant physically capable of entering the space?
- Have overhead hazards/falling objects been eliminated or controlled?

Yes No

- If cleaning solvents or other chemicals are to be used, have the associated fire/explosion/atmospheric hazards been identified and controlled?
- If tools or mechanical equipment are to be used, have the associated fire/explosion/atmospheric hazards been identified and controlled?
- Have all sources of potential hazardous energy release been identified, eliminated and/or controlled?
- Have all requirements of Kent County *Lockout/Tagout Program* been satisfied?
- Has the space been effectively isolated? (i.e., food supply, flavor, water, etc.)
- Check personal protective equipment being used.
  - Hard Hats  Glasses/goggles
  - Chemical protective clothing (use with caustics)  Respirator
  - Gloves (type) \_\_\_\_\_
  - Boots (type) \_\_\_\_\_
  - Other \_\_\_\_\_
- Have all authorized entrants been equipped with full body harness and retrieval line or wristlets? (boilers, etc.)
- Have all retrieval lines been secured to a fixed point or mechanical device outside the permit space? If not, explain \_\_\_\_\_
- Have methods been specified to enable the outside attendant to maintain visual, verbal or signal contact with the authorized entrants while inside?
- Have rescue services, personnel and assignments, including emergency first aid/medical personnel, phone numbers and other contact information, been established and communicated?

**Employee Training and Information**

Yes No

- Have employees received the training required for assigned duties?
  - Site specific/confined space entry briefing
  - Site specific/emergency/rescue procedures
  - Other \_\_\_\_\_

<b>Authorized Entrants</b>		
(1)	Entry Time:	Exit Time:
(2)	Entry Time:	Exit Time:
<b>Attendants</b>		
(1)	Start Time:	End Time:
(2)	Start Time:	End Time:
<b>Entry Supervisor</b>		
	Start Time:	End Time:

I, \_\_\_\_\_, have personally inspected this work area, and have completed the entry verification checklist.  
(Entry Supervisor)

\_\_\_\_\_  
Entry Supervisor Signature

\_\_\_\_\_  
Attendant Signature

**6. Post Entry Review:** I have reviewed this permit, the work performed, and certify that:

Yes No

- Air quality was acceptable at all times during entry.
- No unusual events or incidents related to health and safety occurred as a result of confined space entry.

Attendant Signature: \_\_\_\_\_ Date: \_\_\_\_\_ Time: \_\_\_\_\_

***APPENDIX D***

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***Department of Consumer and Industry Services – Director's Office***  
***Construction Safety Standards***  
***Part 9 - Excavation***

***APPENDIX E***

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***OSHA's Revised Standards on Fall Protection, Subpart M***