

IN RE: AIRBAMS
November 1992

NWBB-0003710



From : CORPORATE INDUSTRIAL HYGIENE
WIN 236-5847
Date : MARCH 19, 1982
Subject : GUIDELINES FOR ESTABLISHING A
RESPIRATOR PROGRAM

To

A recent review was made by Headquarters Industrial Hygiene of OSHA citations received by Westinghouse plants for common violations involving industrial hygiene matters. Inadequate or no respirator program was the most common industrial hygiene related citation for plants which use respirators.

If respirators are in use at a plant either as a control to limit employee exposure in areas where the atmosphere is known to exceed the Permissible Exposure Limits, or as a precautionary measure in unknown work environment then a plant respirator program must be written and administered (See OSHA Regulation 1910.134 "Respirator Protection").

Some Westinghouse plants use respirators very sparingly involving only a few employees, while other plants provide and use several types of respirators as a daily control. Attached is a guideline which should be used to establish a plant respirator program. The guideline was prepared to assist all Westinghouse plants which use respirators establish a program which is appropriate for the type(s) of respirators in use at the plant.

If you have any questions please call Rich Wengrzyn WIN 236-5848.

C. Wayne Bickerstaff
C. Wayne Bickerstaff, Manager
Corporate Industrial Hygiene

/jme
Attachment

GUIDELINES FOR ESTABLISHING A RESPIRATOR PROGRAM

I. PREFACE

- A.** The following is intended as a guide for those (W) Divisions that maintain a respiratory protection program. It presents basic information needed for developing, writing and administering such a program.

II. OVERVIEW

- A.** The Occupational Safety and Health Administration (OSHA) has set maximum Permissible Exposure Limits (PEL) for airborne toxic materials. If employee exposure to these substances exceeds these limits, the law requires that feasible engineering controls and/or administrative controls be installed or instituted to reduce this exposure to acceptable levels. If these controls do not prove feasible, or while they are being installed or instituted, the employer is required to provide appropriate respiratory protection for the employee.

1. Respiratory protection is also required:

- a.** When employee is working in an oxygen deficient atmosphere, that is where the oxygen content in the breathable air is below 19.5%.
 - b.** For routine, but infrequent, operations where exposure would exceed these standards.
 - c.** For non-routine operations in which the employee is exposed briefly to high concentrations of a hazardous substances, for example during maintenance or repair activities or during emergency conditions.
- B.** OSHA 1910.134(b) requires that each facility using respiratory protection for their workers establish a written standard operating procedure governing the selection and use of these respirators.
- C.** The basic elements of a successful respiratory protection program include:
- 1.** Identifying the respiratory hazard.
 - 2.** Evaluating the hazard.
 - 3.** Selecting the proper respirator.
 - 4.** Medical screening of employee.
 - 5.** Fit testing the respirator.

IN RE: AIR AMIS November 1992

C. Selecting the Respirator

1. Selection of the respirator shall be made according to the guidance of American National Standards Practices for respiratory protection Z88.2-1969.
2. After the administrator has reviewed each copy of Form 48099, identified and evaluated the hazards, the following decision logic should be followed to determine the proper respiratory protection.
 - a. What chemicals are involved?
 - b. What is the estimated or measured contaminant concentration where the respirator will be used?
 - c. What is the permissible limit of exposure to the contaminant?
 - d. Is the contaminant a gas, vapor, mist, dust or fume?
 - e. If the contaminant is flammable, does the estimated concentration approach the lower explosive limit?
 - f. Does the contaminant have adequate warning properties?
 - g. Will the contaminant irritate the eyes at the estimated or measured concentration?
 - h. If the contaminant is a gas or vapor, is there an available sorbent that traps it efficiently?
 - i. Can the contaminant be absorbed through the skin as a vapor or liquid? If so, will it cause serious injury?
 - j. What is the frequency of usage?
3. Respiratory protective devices vary in design and protective capabilities application. The selection is based on assessment of the inhalation hazard and an understanding of the specific use and limitations of the equipment.
 - a. Design Variations
 - (1) Quarter facepiece--not a popular design.
 - (2) Half facepiece--most popular and recommended when concentration of contaminant is 1 to 10 times the Permissible Exposure Limit.
 - (3) Full facepiece--needed where contaminant vapors, gases, mists, etc. are: (1) eye and skin irritants; (2) capable of being absorbed through intact skin, or (3) when the airborne concentration is 10 to 100 times the Permissible exposure limit.

TIN RITE ALBERT A. M'S

November 1992

3. Tests that may be useful to determine if worker is physically capable of wearing respiratory protection includes:
 - Pulmonary function
 - Chest X-ray
4. Plant physician makes final determination of workers ability to wear respiratory protective equipment assigned.

E. Fit Testing the Respirator

1. An inventory of several sizes and makes of respirators may be needed to obtain a good fit for all employees.
2. Fitting includes a qualitative test and a quantitative test.
3. OSHA Guidelines for enforcing the fit testing requirements of their respiratory standard were issued in a directive dated October 27, 1980 and include the following statements:
 - a. Respirators must be fit tested.
 - b. A test atmosphere must be applied to assess the quality of fit.
 - c. The fit test must be applied to each and every employee required to wear a respirator.
 - d. The fit testing requirement applies to all negative pressure respirators including SINGLE USE RESPIRATORS.
 - e. Test atmosphere must be applied using recognized qualitative fit testing procedures utilizing iso-amyl acetate, irritant smoke, etc. or quantitative fit testing using corn oil, NaCl, etc.
4. Quantitative test is accurate but requires expensive equipment and trained operators. However, it is required for some nuclear facilities or facilities where employees may enter an atmosphere that is immediately dangerous to health.
 - a. At this time Headquarters Industrial Hygiene is not recommending this test method except in those locations already using it.
5. Qualitative test is not as accurate as a quantitative test, but is simple, expedient and accurate enough for most Westinghouse facilities.
 - a. Recommended by Industrial Hygiene.
 - b. Determines by both a gross fit test and an atmosphere fit test, a proper match between the face piece of the respirator and the face of the wearer.

- He or she should then enter the enclosure with safety spectacles and respirator in place to evaluate the fit.
- Person performing the test then breaks an ampoule (per instructions on the box), holds it in one hand and introduces it into the test enclosure through the test hole. The ampoule is then held one to two inches from the face and passed around the face seal area and exhalation valve, while the person being tested performs the following tasks.
 - normal breathing
 - deep breathing--as during heavy exertion--this should NOT be done long enough to cause hyperventilation.
 - side-to-side and up-and-down head movements--these should be exaggerated, and should approximate those that take place on the job.
 - talking--this is most easily accomplished by reading a prepared text (about 20 words) loudly enough to be understood by the person performing the test.
 - other exercise may be added that would approximate normal activity. For example--bending.
- If person being tested indicates a leak, ask for identification of the odor.
- Most leaks occur around the seal of the nose or cheeks.
- Total time in enclosure should be two minutes.
- When adjustments are needed to obtain a better seal, make them in an area way from the test enclosure and then retest.

TIN RIT AIR AMIS

November 1992

- If subject detects the irritant smoke, it means a defective fit.
- Test must be performed with caution, since the smoke is highly irritating to the eyes, skin and mucous membranes.

- Advantages:

- Employee usually reacts involuntarily to any leakage by coughing or sneezing.
- False indication of proper fit is reduced.

F. Cleaning and Disinfecting

1. Where respirators are used routinely, they must be cleaned and disinfected daily.
2. Where they are used occasionally, periodic cleaning and disinfecting is appropriate. A schedule should be established.
3. Follow respiratory manufacturer's instructions on cleaning.
 - a. Hand cleaning
 - (1) Most manufacturers of respiratory equipment have a cleaner disinfectant available in packets or tablets suitable for hand cleaning. Use according to manufacturers directions. (Examples—Mine Safety Appliances Co. Catalog No. 34337 or INCO's Willson's Germi-Sol tablets).
 - (2) Select a suitable clean container e.g. one gallon bucket for cleaner-disinfectant solution.
 - (3) Remove respirator valve and wash parts in cleaner using a brush or cloth. Thoroughly rinse with clean water heated to 120° F and air dry in a clean place.

TIN REF: ABRAMS

November 1992

b. Considerations during inspection

- (1) Following are some of the primary defects to look for in inspection of the components of the respirator. When appropriate, information within the parentheses are suggested actions to be taken. In many cases, you will have to contact the manufacturer of the equipment or the equipment vendor.

(a) Disposable respirator--check for:

- holes in the filter (obtain new disposable respirator).
- straps for elasticity and deterioration (replace straps--contact manufacturer); and
- metal nose clip for deterioration, if applicable (obtain new disposable respirator).

(b) Air-purifying respirators (quarter-mask, half-mask, full facepiece, and gas mask).

● **Rubber facepiece--check for:**

- excessive dirt (clean all dirt from facepiece);
- cracks, tears, or holes (obtain new facepiece);
- distortion (allow facepiece to "sit" -- free from any constraints and see if distortion disappears; if not, obtain new facepiece); and
- cracked, scratched or loose fitting lenses (contact respirator manufacturer to see if replacement is possible; otherwise, obtain new facepiece).

● **Headstraps--check for:**

- breaks or tears (replace headstraps);
- loss of elasticity (replace headstraps);
- broken or malfunctioning buckles or attachments (obtain new buckles); and
- excessively worn serrations on the head harness which might allow the facepiece to slip (replace headstrap).

- Hood, helmet, blouse, or full suit, if applicable--check for:
 - rips and torn seams (if unable to repair the tear adequately, replace);
 - headgear suspension (adjust properly for individual employee);
 - cracks or breaks in faceshield (replace faceshield); and
 - protective screen to see that it is intact and fits correctly over the faceshield, abrasive blasting hoods, and blouses (obtain new screen).
- Air supply system--check for:
 - breathing air quality;
 - breaks or kinks in air supply hoses and end fitting attachments (replace hose and/or fitting);
 - tightness of connections;
 - proper setting of regulators and valves (consult manufacturer's recommendations); and
 - correct operation of air-purifying elements and carbon monoxide alarm or high-temperature alarms.
- Self-contained breathing apparatus (SCBA)--
 - consult manufacturer's literature.

2. Repairing

- (a) Continued usage of respiratory protective equipment may require periodic repair or replacement of defective parts. Such repairs and parts replacement shall be done by a qualified individual.
 - (1) Replacement parts available from manufacturer.
 - (2) Replacement parts of respiratory protective equipment must be those of the manufacturer of the equipment.
 - substitution will invalidate the approval of the respirator.

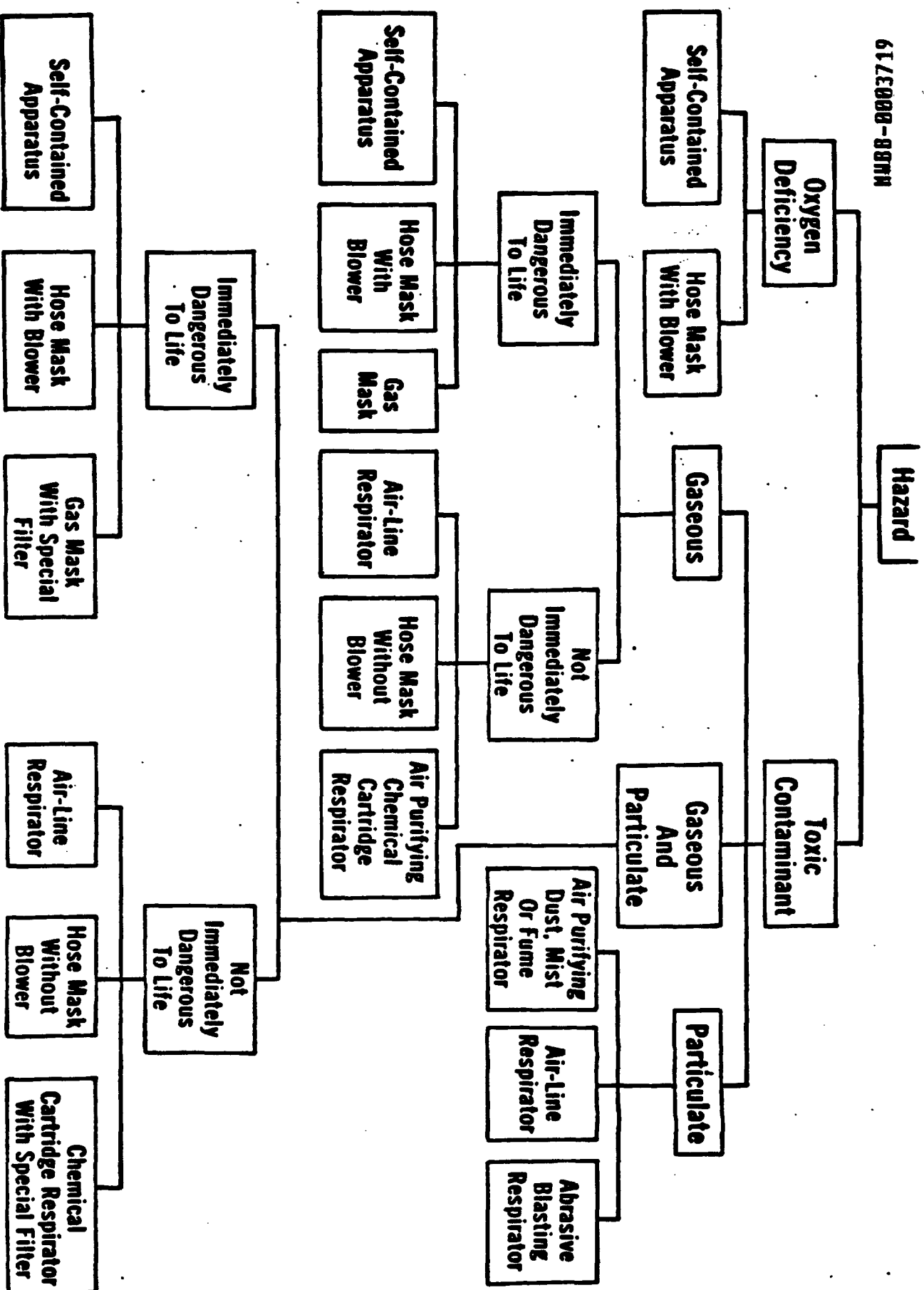
3. Record Keeping

- (a) A record must be kept of inspection dates and findings for respirators maintained for emergency use.

IN RE: ABRAMS November 1992

HW88-0003718

2. Written standard operating procedure shall be developed for each Westinghouse location.
 - a. Include all information needed to insure proper respiratory protection for specific groups of workers against a specific hazard or several hazards.
 - (1) The hazard(s) must have been assessed thoroughly in order to accomplish this.
 - b. Procedure shall contain:
 - (1) Guidance for selection of the approved respirator(s) for protection against particular hazard(s).
 - (2) Detailed instructions for training workers in proper use of the respirator(s), including respirator fitting.
 - (3) Detailed maintenance procedures for:
 - (a) Cleaning and disinfecting;
 - (b) Drying;
 - (c) Inspecting;
 - (d) Repairing or replacement of worn or defective components;
 - (e) Storing.
 - (4) Administrative procedures for:
 - (a) Purchase of approved or accepted respirator(s).
 - (b) Control of inventory of spare parts, new respirators and respirators ready for reissue after maintenance.
 - (c) Issuance of respirators to insure use of the proper one for a given hazard.
 - (d) Guidance of supervisory personnel in surveillance of respirator use and determination of workers' exposure to respiratory hazards.
 - (5) Instructions for use of respirators during emergencies including, fire, large spills of toxic materials, accidental release of potentially lethal substances or failure of a ventilation system, which can create an atmosphere immediately hazardous to life and health.



Outline For Selecting Respiratory Protective Devices

FIGURE 2

2661 JOUQAOON

SIN V RIV ERI NI



Negative Pressure Test

FIGURE 3



Positive Pressure Test

FIGURE 4

IN RE: AIRMAIS November 1992

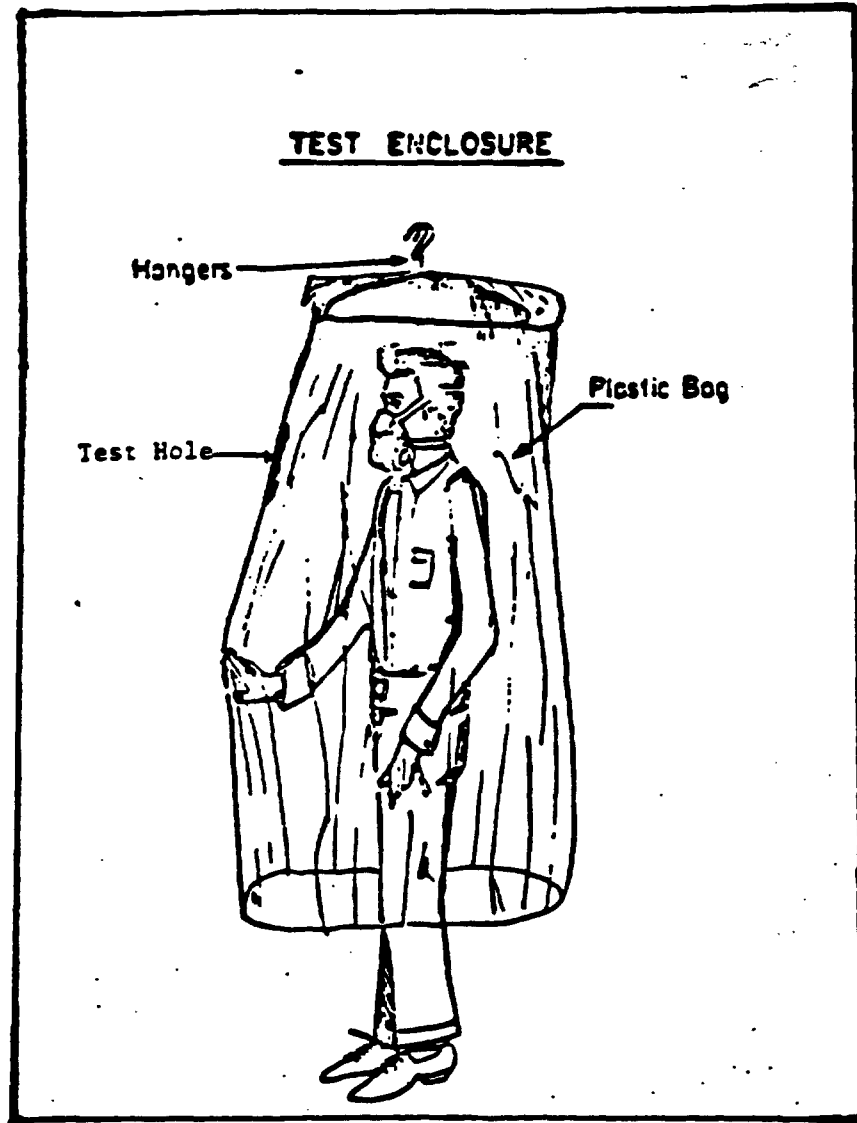


FIGURE 5