

APPENDIX A

RESPIRATORY SYSTEMS DEVICES AND GUIDE TO SELECTION

1. Introduction

PLAINTIFF'S EXHIBIT

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Following are listed the various types of devices currently in use in the plant. Any new applications should be carefully considered and selection should be as a result of department supervision and Loss Prevention and Safety Department consultation. *A GUIDE TO SELECTION IS INCLUDED IN THIS Appendix.*

A. Self Contained Breathing Apparatus

- (1) Airline Respirators. Full-face and half-face masks provide protection for those who must work for prolonged periods in harmful or objectionable atmospheres. They are not intended for use in atmospheres immediately dangerous to life or from which the wearer could not escape without respiratory protection.
- (2) Scott Air Pak - Intended for short-term emergency work in contaminated atmospheres. Full face mask with a cylinder of compressed air approved for one-hour of continuous use when the cylinder is fully charged to 1980 psi. Safely used in any atmosphere except that which irritates or poisons through the skin such as HCN, concentrated ammonia, ACY, etc. For the latter applications, it can be used in conjunction with vapor proof suit, for short-term emergency work in the contaminated atmosphere.
- (3) Lear-Seigler Escape Mask. Mask is equipped with a small container of compressed air which will provide a five minute supply of breathing air. Because of the limited breathing air provided, use is limited to escape from contaminated atmospheres only.

B. Canister Type Masks. Three types, listed below, are commonly used and are available from Safety Supply. The canister contains a substance which either absorbs the harmful gas or vapor, or changes it into something which is relatively harmless. All canisters are limited to maximum harmful substance concentrations of 2% by volume in air except the GML which is good for a maximum of 1% by volume in air.

SC	15446	Color		Usage
		Type	Canister	
		(1) GMK	White, green stripe	Hydrocyanic acid gas (Dept. 19 working mask)
		(2) GML	White, yellow & grey stripe	Mercury vapor; toxic dust; chlorine. Max. of 1% by volume.
		(3) Type "N" Model SW	Red	Acid gasses, ammonia, carbon monoxide, organic vapors, hydrocyanic acid, and chlorine

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...the plant. The cartridges are type for organic vapors and should be limited to use in atmospheres containing at least 19.5% oxygen and less than 1/10% organic vapors by volume.

D. Dust Respirators

A mechanical filter instead of a cartridge is used when exposure is to a dust which is irritating to the nose or throat or which may cause trouble in the bronchial tubes or lungs. The filter inserts may be replaced as they become clogged and restrict breathing.

E. Cloth Respirators

Use is limited to "nuisance" dusts, such as floor sweepings and do not have approval for protection against harmful dusts.

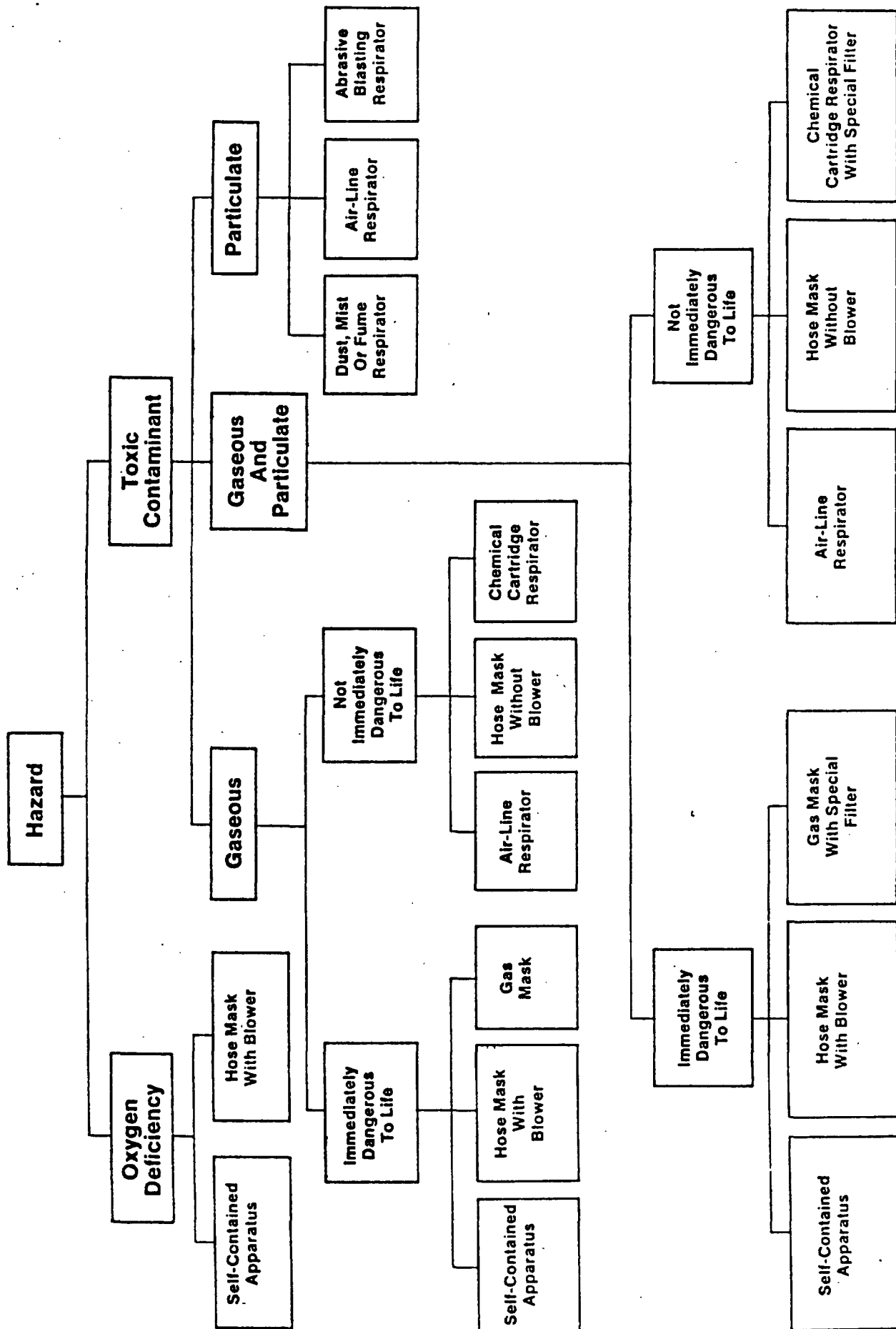
2. GUIDE TO SELECTION

Selection of equipment to provide respiratory protection should be made as a result of consultation between department supervisor and San Bernardino and Safety Section. Decisions should follow the flow diagram in Figure 1. Definition of terms used on this diagram are given in Table 1. The selection of equipment and the selection of the number of respirators to wear are given in Table 2. The concentration of contaminants is given in Table 3.

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* DEFINITION OF TERMS

1. DUSTS - Solid particles generated by handling, crushing, grinding, rapid impact, detonation, and decrepitation of organic or inorganic materials, such as rock, ore, metal, coal, wood, and grain. Dust may enter the air from various sources. It may be dispersed when a dusty material is handled, such as when lead oxide is dumped into a mixer or a product is dusted with talc. When solid materials are reduced to small sizes in processes such as grinding, crushing, blasting, shaking, and drilling, the mechanical action of the grinding or shaking device supplies a source of energy to disperse the dust formed.
2. FUMES - Solid particles generated by condensation from the gaseous state, generally after volatilization from molten metals. this physical change is often accompanied by a chemical reaction, such as oxidation.
3. SMOKE - Carbon or soot particles less than 0.1 m in size which result from the incomplete combustion of carbonaceous materials such as coal or oil. Smoke generally contains droplets as well as dry particles.
4. MISTS - Suspended liquid droplets generated by condensation from the gaseous to the liquid state or by breaking up a liquid into a dispersed state, such as by splashing, foaming, or atomizing. Mist is formed when a finely divided liquid is suspended in the atmosphere. Examples are the oil mist produced during cutting and grinding operations, acid mists from electroplating, acid or alkali mists from pickling operations, paint spray mist from spraying operations and the condensation of water vapor to form a fog or rain.
5. GASES - Normally formless fluids which occupy the space or enclosure and which can be changed to the liquid or solid state only by the combined effect of increased pressure and decreased temperature. Examples are welding gases, internal combustion engine exhaust gases, and air.
6. VAPORS - The gaseous form of substances which are normally in the solid or liquid state (at room temperature and pressure). Evaporation is the process by which a liquid is changed into the vapor state and mixed with the surrounding atmosphere. Solvents with low boiling points will volatilize readily.

* Fundamentals of Industrial Hygiene, Edited by Julian B. Olishifski, P.E., and Frank E. McElroy, P.E., Copyright 1971-National Safety Council.

RESPIRATOR TERMINOLOGY/FUNCTION/APPLICATION

The old BOM and the current NIOSH testing/approval system have cultivated the attitude of thinking of respirators in terms of protection against specific hazards or groups of hazards. The current trend, however, and proper I.H. practice demands that we select an approved respirator on the basis of the degree of protection required by the situation.

A. Language/Terminology

1. Approved/Accepted Respirator - 30 CFR 11 definition - approved as a unit.
2. IDLH Atmosphere - immediately dangerous to life or health or threat of harmful exposure.
3. Hazardous Atmosphere - contains toxic or disease producing material or is oxygen deficient.- 1910.134 definition.
4. Protection Factors - ratio of contaminant concentration outside and inside the respirator or expression of the degree of protection afforded by a specific type of respirator.
5. Adequate Warning Property - odor, taste, eye and lung irritation - use Decision Logic definition.
6. Break Thru - refers to the time required for a gas or vapor to penetrate the sorbent material in a cartridge or canister - varies widely with contaminant and use conditions.
7. Odor Threshold - concentration at which odor of a material can be detected. Material sometimes overwhelms olfactory sense.

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