



Confined Space Hazards

Info Sheet 5a

We define “safety” as the application of skills, technology, documents and analytics to minimize the short or long term consequences of a hazard. We have standards and regulations that provide guidance once we know what the hazard is. What eludes us most often is we don’t see the hazard. For years an American television station has peppered their broadcasting (especially children’s programming) with “the more you know” ads. These ads are to stimulate interest in further education which will enhance the listeners life. The same is true with hazards.

Hazard identification is the corner stone of any effective safety program. It is imperative that a hazard identification process be completed. Only once a hazard is found can you implement a control to eliminate or minimize its impact. Hazard identification helps you to understand what will hurt you. To clearly “see” a hazard, you must understand what you are looking for. There are countless optical illusions that show by focussing your vision a specific way you can clearly see a hidden object. That is what the hazard identification process is all about, clearly seeing something that is hidden in plain sight. To refocus your vision, the hazards you look for must be clearly defined in terms that everyone can understand or recognize (e.g. moving parts/equipment vs. mechanical energy). Hazards can occur from what is in the space, what is happening around the space as well as what job is being performed. Some jobs will have inherent hazards and you should also consider the synergistic effect when hazards combine (e.g. pressure and dust). To accomplish this requires a written list of clearly defined dangers that includes the acceptable levels of exposure to each hazard. A great list will eliminate assumptions made by the experienced journeyman and/or focus the sights of a novice which may be guided by the fear of the unknown. Definitions should include specific acceptable targets wherever practical. The definition can use words, numbers or even photos and drawings. For instance:

- biological hazards are living organisms being parasites, bacteria, viruses and/or fungi.
- temperature can have an acceptable range between 100 C and 370 C
- clutter is defined as “the accumulation of items without order”. Photos and drawings of an acceptable site shows what you mean.

The identification process also facilitates the employee’s “right to know” about the hazards they face. The unstated benefit to this right to know, is now the worker not only understands why certain hazard control systems are required but is motivated to use them as they can see the consequences (injuries) that could happen if protection is not in place.



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Info Sheet 5 b

Hazard	Definition
Acceleration	A sudden increase in the speed of an object greater than .25m/sec.
Biological	Harmful parasites, bacteria, viruses and/or fungi.
Blocked Pathways	Human pathways are restricted by tools, materials or the space design (e.g. low ceilings, comers, protrusions or small doorways) to a width of less than .9 m (3') and/or a height of 2m (6'5") and/or without a flat walking surface that prevents or slows a person from leaving.
Choices	When you must decide between two or more non similar views, objectives/priorities, tools or procedures when completing a task.
Clutter	The accumulation of non-permanent items without order.
Corrosives	A material has a pH value below 6.5 or above 12
Dust, Mist or Fumes	The accumulation of 40 µg/m ³ or greater of airborne materials less than 2.5 microns in diameter.
Electric Current	Electricity greater than 50 milliamps moving from point A to B
Energy Waves	Invisible energy waves (e.g. Ionizing – alpha, beta, gamma and x rays as well as non-ionizing – UV, infrared, microwaves, laser and radio waves)
Engulfment/ Entrapment	When a free flowing solid or a liquid weighing more than 50 lbs/ft ³ surrounds an individual or if a structural form, defect or similar issue could prevent a worker from leaving the space without assistance.
Falling	Different levels provide the opportunity for gravity to move an object or a person to a lower level.
Flammable/ Combustible Materials	Materials that become a fuel (will smoulder or burn) at or below the operating temperatures from a head source (tool or process) present in the space.
Lack of Oxygen	When the oxygen going to the body cell tissue drops below 19.5%
Lack of Planning	When we fail to define the job, look at the issues of the job or allocate sufficient resources to do the job.
Light Extremes	When lighting, space design or process increases or decreases light from 5 Watts/m ² (.46 watts/ft ²).
Moving Equipment/ Parts	Spindles, shafts, gears, belts, arms, pulleys, or even the entire device moving intentionally or unintentionally in any direction (up/down, in/out, diagonally or rotating) that could grab, pinch, hit or trap an individual.
Noise	Sound measuring over 89 decibels.
Oxidizer	A substance or reaction that increases the flammability of a substance.
People's Positions	An individual's stance that may create temporary or permanent injury (wound, fracture or inflammation).
Poisons/Toxins	Materials when mixed with other substances generate large quantities of heat or pressure.
Pressure	Directed force either above 15 psig or above 15mm of vacuum.
Reactive Material	Materials when mixed with other substances generate large quantities of heat or pressure.
Sharps	Edges that are sharp, pointed, grounded, angled or otherwise designed and will cause damage (e.g. friction, punctures, lacerations, etc.) when an item contracts it.
State of Mind	The unanticipated reaction of an individual(s) to an event that causes unintended consequences.
Structural Failure	Breakdown due to the application of either short term or long term stress.
Synergy	The combination of a number of hazards to produce a hazard greater than the mathematical sum (e.g. 1+1=3).
Temperature Extremes	When the temperature of a space is below 10° C above 37° C.
Vehicle Traffic	Machines that move in a primarily horizontal direction and have operator direction.