



HEALTH & SAFETY ISSUES

Landfill Owners/Operators Employer Responsibilities

Includes the health and safety of all on-the-job employees including short and long-term exposure to potential hazards while working at a landfill site. Employers:

- Must determine which landfill jobs bring employees in contact with vapors, liquids and particulates that could cause short or long-term health problems.
- Must comply with the numerous health and safety laws that apply to normal working activities, engineering, construction, excavation and drilling activities. Specialized activities require separate plans, programs and training in accordance with applicable regulations.

Liability

- Federal and state laws mandate requirements and place the burden of proof on the employer to demonstrate regulatory compliance.
- Safety and health issues must be adequately addressed to avoid significant potential liability problems.

Employer Must Demonstrate Adequate Compliance

- Employers must provide health and safety programs and training for potential hazards that could be encountered while working on the landfill site including:
 - ◆ Exposure to dangerous gases - hydrogen sulfide, carbon monoxide, methane and others.
 - ◆ Exposure to dangerous chemicals - vinyl chloride, benzene, toluene, methylene chloride, etc.
 - ◆ Exposure to unsanitary or infectious wastes.
 - ◆ Exposure to dangerous minerals and compounds - including asbestos, heavy metals, acids and caustics.
 - ◆ Exposure to radioactive materials.
 - ◆ Exposure to shock-sensitive compounds that may violently react or explode.
 - ◆ Exposure to a combination of working conditions that might promote heat stress, dehydration, hearing loss, or breathing difficulties.

Required Health and Safety Programs

Individual state OSHA statutes typically address the following:

- Accident Prevention Program (General Safety)
- Hazard Communication and “Right-To-Know” Program
- Respiratory Protection Program
- Medical Monitoring Program
- Safety Training Program including Hazardous Materials and Hazardous Waste Site Training, if applicable (29CFR1910.120)
- Personnel and Work Environment Monitoring Program

- Record Keeping & Maintenance for all of the above programs

Accident Prevention Program

- A written Accident Prevention Program is the first basic building block of an overall Health and Safety Plan.
- The program should cover company policies, objectives, specific assignments of responsibility, the availability and location of resources.

Hazard Communication Standards

- The Hazard Communication Program must inform and train employees how to safely use the various chemicals with which they come in contact.
- Material Safety Data Sheets (MSDS) must be maintained on-site and personnel must be trained in their understanding and use.
 - ◆ Survey the site for all products, even those only used occasionally.
 - ◆ Keep MSDS files updated and accessible. Require that employees and subcontractors working on the site be made aware of the file according to “right-to-know” programs.

Respiratory Protection Program

- A written respiratory protection program is legally required at sites where it is necessary to employ the use of respiratory protection equipment.
 - ◆ Site characterization will identify the need for protection from organic vapors, acid gases, and particulates.
 - ◆ Respirators are not approved for use against vapors which have poor warning properties.
- There is considerable specialized training required before respirators are used at a site.
- Many activities on municipal solid waste landfills may be safely done without respirators. However, there are many instances where protection will be required and qualified parties may have to provide them when drilling, excavating, trenching, working in confined spaces, or doing hot work in potentially dangerous environments.

Medical Monitoring Program

- This may be required for work on hazardous waste sites depending on project-specific conditions. On sites which are permitted as non-hazardous but may contain hazardous materials or emit known hazardous constituents at concentrations which may be above a specified level of concern, the need for, and extent of medical surveillance becomes a legal and business decision.
- Superfund Sites require medical monitoring programs for 30 years for all involved staff.

Safety Training Program

- Safety is another basic program that has several functions:
 - ◆ Teaches and informs employees about basic safety concerns.
 - ◆ Addresses job-specific hazards likely to be encountered.
 - ◆ Fulfills certain legal notification and training requirements under state and federal laws.
 - ◆ Heightens employee awareness in general about safety.
- If work includes potential exposure to hazardous materials at hazardous waste sites, then very specialized training

will be required.

Personnel & Work Environment Monitoring Program

- An employer must monitor employees and/or the work environment whenever they know, or suspect, there may be a risk for employee exposure.
- Threshold exposure limits must be evaluated by a thorough site characterization survey. Due consideration should be given to uncontrolled environments and changing conditions, such as during well drilling activities.
- Monitoring or sampling techniques may include equipment that provides protection or alerts those in the work environment including: methane sensors, combustible gas analyzers, hydrogen sulfide monitors, carbon monoxide detectors, oxygen analyzers, etc. They may be used regularly or during specific activities such as drilling, trenching, excavation or other work.
- Monitoring perimeter or additional sampling should be determined based on the types of hazards, risks present, and the extent of exposure for the work to be performed.

Records Maintenance

- Accurate, reproducible and verifiable records are essential for an effective overall health and safety program.
- Where specific compliance cannot be easily demonstrated, various records and programs may indirectly show the intent to comply.

Program Implementation

- To be effective, health and safety programs must be practical and clear. Hazards, risks, and dangers must be put in proper perspective or the program can become very costly and unwieldy. The burden of proof for compliance of the program is squarely on the employer.
- Effective programs deal with all the issues, and balance the trade-offs that are required to deal with changing guidelines and standards.
- The more industry participates in the promulgating of the standards, and develops the specialized training required, the more realistic the workable programs become.
- There are real costs involved in program implementation, Do not discount them.
 - ◆ Specialized equipment may be required for proper monitoring.
 - ◆ Site characterization and testing is expensive.
 - ◆ Special clothing, masks, ear plugs, and other gear impact O&M.
 - ◆ Don't forget to include the costs necessary to monitor and upgrade programs on a regular basis.
- Excessive, unrealistic or inappropriate controls can lead to safety risks and cause accidents and injuries. Good common sense and good judgement should be allowed to prevail.

In Conclusion

- Employers will incur additional health and safety issues once landfill gas control begins at a landfill site. Likewise, needs and responsibilities will change as the site changes from open to closed.
- Besides providing new equipment and supplies, management must diligently review and enforce compliance until new habits and procedures are developed. Also, the new rules and requirements must be included in updated job descriptions.

- Management must establish routine audit and monitoring programs to assure compliance.
- It is easy to become complacent. Continued training, ongoing discussion, re-evaluation, quality control auditing, and updating of programs is necessary at regular intervals.

The above suggestions and information does not apply to all landfills or situations and is offered only as a generic guidelines. State and federal laws and specific company policies can change at any time.

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Additional LANDTEC Information

Information on LANDTEC’s products, which are specifically designed to work together in landfill applications, include: landfill gas collection products, measurement & instrumentation equipment, condensate/leachate treatment systems, flares and landfill gas management software.

LANDTEC also has additional technical and educational literature on specific landfill subjects and issues. Please call our toll free number 1-800-821-0496 (8 a.m. - 5 p.m. West Coast time) for additional information or placement on our mailing list.

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