Industrial Hygiene and Ergonomic Services

Making the work environment a safer place
Industrial hygiene and ergonomic services

The risk of exposure to occupational health hazards exists in almost every type of business. Each day they report to work, employees risk exposure to many kinds of potentially harmful stresses in the work place. Determining if such exposures present a hazard requires specialized knowledge in the field of industrial hygiene.

Zurich Services Corporation provides industrial hygiene services through a group of industrial hygienists, ergonomists and risk engineering representatives located across the country. Our staff receives specialized training in the latest evaluation and control techniques.

Here’s a closer look at the types of industrial hygiene services available. It is not a complete list, but it represents those services our customers have requested most often. We think you will find them of value, too.
Chemical exposure surveys

Concern about exposure to chemicals used as raw materials or generated from processes continues to increase as the toxic nature of many chemicals is better understood. The enactment of workplace regulations, such as hazard communication, has reinforced the question many employees and employers have been asking for years, “What chemicals are we exposed to?” The industrial hygienist answers that question and, more importantly, determines if the chemical exposure is actually hazardous. The hygienist applies the statutory and advisory standards for the safe use of chemicals to determine if the exposure is well controlled.

Measurement of employee exposure to potentially hazardous airborne chemicals is one of the most important steps in determining if chemicals are being used safely or not. Without special survey procedures, many health hazards go unnoticed. Our industrial hygienists utilize sampling methods designed to assess the employee’s average exposure over the course of the day. The results may show that an excessive exposure exists which needs to be controlled. Our customers have also found that results which show no excessive exposure are also useful because they demonstrate compliance with safety and health standards and regulations. For some chemicals, OSHA requires initial and periodic exposure monitoring.

Some common processes and their emissions

<table>
<thead>
<tr>
<th>Process</th>
<th>Hazardous emissions</th>
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<tbody>
<tr>
<td>Welding</td>
<td>Metal fumes, irritant gases</td>
</tr>
<tr>
<td>Painting</td>
<td>Organic solvent vapors, toxic pigments</td>
</tr>
<tr>
<td>Metal cleaning</td>
<td>Organic solvent vapors, acid or caustic mists</td>
</tr>
<tr>
<td>Sandblasting</td>
<td>Silica dust, surface residues</td>
</tr>
<tr>
<td>Woodworking</td>
<td>Wood dusts, cement solvent vapors</td>
</tr>
<tr>
<td>Printing</td>
<td>Organic solvent vapors, formaldehyde</td>
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</table>
After the survey, we provide a detailed and informative report describing our survey methods, results and what they mean to you. Included is the information you may need to inform employees of the results and provide documentation for compliance purposes.

Don’t wait for the hidden health hazards of today to cause injuries and illnesses in the future. Call on our Industrial Hygiene Services to uncover these hazards.
Noise exposure surveys

Exposure to excessive noise is the most common occupational health problem in most industries. Prolonged exposure to excessive noise can cause slow, progressive and irreversible loss of hearing, which can result in workers compensation claims.

Determining if noise exposure is excessive, that is, above the statutory limits, involves more than just a subjective sense that one of your areas or operations is noisy. Sometimes, what may seem noisy, is not hazardous to hearing because employees do not perform the operation all day.

Our noise exposure surveys are specifically designed to take the guesswork out of your noise exposure questions. We emphasize the use of a survey method called audiosimetry, which averages all the high and low noise levels an employee encounters in a day to determine if a noise exposure hazard (and risk of hearing loss) exists.

The hearing loss caused by exposure to high noise levels doesn’t have to occur. Where problems are found, we’ll recommend the steps you need to take to reduce the noise exposures to your employees, and thus, their risk of hearing loss. These steps will also help you comply with hearing conservation regulations. In fact, our noise survey report is specifically designed to demonstrate that the survey was conducted with these regulations in mind. Our industrial hygiene staff is ready to assist you in solving your noise exposure problems.

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**Noise levels produced by industrial equipment**

<table>
<thead>
<tr>
<th>Equipment</th>
<th>Decibels—dB(A)</th>
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<tbody>
<tr>
<td>Pneumatic grinder</td>
<td>120</td>
</tr>
<tr>
<td>Wood planer</td>
<td>100</td>
</tr>
<tr>
<td>Newspaper press</td>
<td>80</td>
</tr>
<tr>
<td>Jackhammer</td>
<td>60</td>
</tr>
<tr>
<td>Air compressor</td>
<td>40</td>
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**FEDERAL 8-HOUR LIMIT**

- 80 dB(A)
Ergonomic hazard surveys

In many cases, ergonomic hazards have the greatest negative impact on an employer’s workers’ compensation loss experience. These hazards exist when employees must perform jobs or tasks that exceed their physical capabilities. Frequently, these ergonomic hazards result in strain and sprain injuries to the muscles and joints, or lead to cumulative trauma disorders.

Material handling ergonomics

Despite advances in automation, many operations still rely on manual material handling: that is, the manual lifting, lowering, pushing, pulling, and carrying of various materials and objects. These tasks can result in overexertion injuries if some attention is not paid to the amount of weight employees are required to handle. Training in “safe lifting methods” is often not enough to prevent these injuries if the weights lifted are excessive.

Our ergonomic evaluations of lifting and other manual tasks can determine if weights and forces are excessive. We’ll apply nationally recognized guidelines on how much weight most workers can safely handle.

Safe and potentially hazardous lifts from floor level

[Diagram showing weight lifted vs. horizontal location of hands]
If we find potentially hazardous tasks, we may recommend changes intended to lower the amount of force employees must exert, or recommend material handling aids such as carts and hoists. Studies have shown that ergonomic improvements to the task or job have a proven impact on reducing the frequency and severity of injuries from manual material handling.

**Upper extremity ergonomics**

Other ergonomic hazards include repetitive and forceful hand and arm tasks that may lead to tendonitis, carpal tunnel syndrome or other cumulative trauma disorders. We can use video taping and analysis to help isolate the ergonomic stresses in repetitive tasks, or simply apply recognized guidelines on how to better fit tasks to workers. Even minor changes, such as adjusting the height of the work surface or replacing a hand tool, can ergonomically improve a task and lower the risk of injury.
Program development and auditing

Hazard control programs need to be developed and implemented by companies to (1) ensure compliance with workplace regulations and (2) to serve as an ongoing reference for how hazards will be controlled and who is responsible for implementing the elements of the program.

For example, to provide effective hearing conservation and respiratory protection, the use of personal protective equipment, i.e., ear plugs or respirators, must be supplemented with an ongoing program. The program should ensure proper selection, use and maintenance of this equipment and monitor employee exposures and health. Hazard communication programs, which are intended to reduce the risk of injury or illness from hazardous chemicals, are required wherever these chemicals are used or produced.

Confined space entry and emergency response are examples of programs where administrative controls and employee training are needed to help keep a potentially hazardous situation from causing serious injury or death.
Our industrial hygiene and risk engineering staff can assist you in the development of a hazard control program. We emphasize a hands-on approach, working directly with the personnel that you’ve selected to implement the program. We break down seemingly complex regulatory requirements into specific steps to develop and implement your program. We give recommendations on how to complete those steps.

We can even help companies with existing programs by conducting an audit or review of these programs. Often, it’s helpful to have a second opinion on how well your program is operating. Too often, companies set up and implement programs without a mechanism to keep them up-to-date with changes in the workplace or changes in the regulations and guidelines affecting those programs.

We can review your control program, compare what you have to what you should have, and recommend steps you can take to make the program more effective.

<table>
<thead>
<tr>
<th>Program audits</th>
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<tbody>
<tr>
<td>✔ Hazard communication</td>
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<tr>
<td>✔ Respiratory protection</td>
</tr>
<tr>
<td>✔ Hearing conservation</td>
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<tr>
<td>✔ Confined space entry</td>
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<tr>
<td>✔ Lead control</td>
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<tr>
<td>✔ Silica control</td>
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Training programs

Many of our customers recognize the value of increasing the safety and health expertise of their own staff, from front-line managers and supervisors to production employees. Our training programs are designed to improve the ability of your staff to anticipate, recognize and take steps towards controlling occupational health and ergonomic hazards. This results in fewer losses and helps ensure compliance with regulations. All programs can be customized for your industry and your employees.

**Fundamentals of industrial hygiene**
A half-day course designed to provide an introduction to how chemical and noise exposures are created in the workplace, and how the potential hazards from these exposures can be recognized, evaluated and controlled.

**Industrial hygiene evaluation**
A half-day course that supplements “Fundamentals of Industrial Hygiene,” and is designed for customers acquiring their own industrial hygiene sampling equipment (e.g., air sampling pumps or noise monitoring equipment). The course provides hands-on demonstration of how to conduct exposure monitoring and evaluate the results.

**Computer workstation ergonomics**
A one-hour course that describes how to adjust a computer workstation to help ensure comfortable keyboarding and mouse usage.

**Applied ergonomics**
A one and one-half day course that provides tools for organizations to address the ergonomic risk factors in their facilities. Managers, supervisors, engineers and ergonomic team members learn about risk factors, work station design, manual material handling, medical management and ergonomic program development. A ‘hands-on’ approach is emphasized which allows team members to develop solutions from job-specific examples.
Other services

Office indoor air quality surveys
With the introduction of energy-efficient office buildings in the 1970's, the amount of fresh, outdoor air provided for building occupants was generally reduced as more air was recirculated to cut energy use. Recirculated air, along with indoor emissions from office furnishings and equipment as well as activities such as tobacco smoking, has contributed to an increased concern for the quality of indoor air. This change has also increased requests to building owners to investigate possible causes of "tight building syndrome" or "sick building syndrome." Our industrial hygienists can perform a preliminary investigation of an office environment to help determine the source and rate of outdoor air supply and determine if it is adequate for the current occupancy.

Heat stress surveys
In occupations where workers are exposed to a combination of high temperatures, high humidity and heavy work, heat-induced illness and injury may occur. These illnesses can range from mild heat cramps to the more serious heat exhaustion and life-threatening heat stroke. Our industrial hygienists can evaluate the environmental heat exposure and the contribution that work effort plays in a potential heat stress situation. We can then recommend steps you can take to reduce the average amount of heat stress an employee is exposed to.

Industrial ventilation surveys
Ventilation systems installed to control employee exposure to hazardous air contaminants should be periodically surveyed to determine if they are performing the job they were installed to do—protect the employee. Often, the performance of a ventilation system is compromised by poor maintenance or by in-house modifications that unbalance or overtax the system’s original design. Our industrial hygienists can survey the system, evaluate air flow and compare the system to recognized guidelines on industrial ventilation design. We may also conduct air sampling to determine employees’ exposure to the substances that the ventilation is supposed to be removing.