



**Contract Professionals**

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# Employee Health, Safety & Environmental Protection Process



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## **I. AEI Health, Safety & Environmental (HSE) Policy**

AEI is dedicated to being the leading provider of contract professionals who are committed to excellence in Health, Safety & Environmental performance. Our goal is for our employees to have an injury free workplace at every location. We are committed to working injury free, and creating an environment with our clients that values HSE excellence.

## **II. Purpose, Scope and Organization**

The purpose of the AEI Health, Safety & Environmental protection process is to ensure that AEI employees have the knowledge, resources and leadership to work injury free at every location and that we protect the workforce and communities of our client companies. HSE excellence also requires the commitment and action by every employee. The policies, processes and programs defined in this manual are designed to define the basics of our commitment for all employees, and to define the behaviors that demonstrate commitment to HSE excellence. It is also a resource for employees to better understand their roles in programs such as incident investigation and Job hazard analysis. This manual is available to all employees and clients.

In addition, employees working at client facilities are required to know and adhere to all safety requirements of the client facility to which they are assigned. AEI employees are normally supervised at client facilities by the client's staff. AEI has defined a Safety Coordinator to interact with the client to monitor, assess and improve HSE performance.

## **III. Management Commitment and Responsibilities**

To accomplish an injury free goal AEI is committed to:

- Set objectives and targets that result in continuous improvement of our Health, Safety & Environmental performance.
- Provide the leadership and resources that will enable our workforce to meet improvement objectives and targets.
- Identify, assess and manage the Health, Safety & Environmental risks and impacts of our existing and planned assignments.
- Require every employee to take personal responsibility towards meeting Health, Safety & Environmental objectives.
- Include Health, Safety & Environmental performance when evaluating employees for compensation, rewards, and recognition.
- Work with our clients to evaluate the HSE performance of our employees at the client's facilities.
- Comply with applicable Health, Safety & Environmental laws and regulations.
- Recognize that no task is so important that it be performed at the risk of injury or illness.
- Provide internal standards for our managers and employees where controlling laws and regulations do not exist or are considered insufficient.

- Communicate regularly with the companies we serve to develop and maintain a mutual understanding of goals and expectations.
- Promote the conservation of energy and natural resources and reduce waste.
- Routinely monitor, assess and report on the Company's Health, Safety & Environmental performance and on our conformity with this policy.
- Investigate all accidents and injuries, and communicate to all employees what actions should be taken to prevent similar accidents in the future.

#### **IV. Safe Behavior Expectations and Responsibilities**

The potential exists for injury in every task both in the office and in the field. We expect every employee who is committed to HSE excellence to know the potential hazards in their assigned workplace, and to take appropriate actions to prevent injuries from those hazards. No employee is required to do any task that cannot be done safely.

Safe behaviors are the observable actions employees committed to HSE excellence. Based upon federal regulations and good industry practice we have defined a set of core safe behaviors for all employees. Failure to follow safe behaviors will result in disciplinary action, up to and including termination. In addition, failure to meet client safety expectations on a client facility will also result in disciplinary action.

##### ***Job Assignment Categories:***

AEI provides contact professionals with a variety of job descriptions, each job having specific potential hazards. Our clients also have specific safety requirements for jobs and locations that AEI employees must know and meet. For simplicity and clarity, safe behavior expectations are divided into two job categories:

- **Administrative Support Professionals** – These are primarily inside jobs that do not interact with the process operations at the client facility. These jobs include accounting/purchasing, recruiting related, HR/OD/PR, administrative assistant and business services.
- **Technical Support Professionals** - These are primarily outside or laboratory jobs, but include other inside jobs that do interact with the process operations at the client facility. These jobs include process engineers, technicians, project support, chemists and safety professionals.

Every employee must review the safe behavior expectations for their job category. The review can be completed on-line using your personal login identification. The quiz at the end of the safety program is used to assess and demonstrate understanding of program requirements. If you are unable to demonstrate understanding, the AEI Safety Coordinator will work with you to clarify any requirement.

##### ***Safe Behaviors for Administrative Support Professionals***

The following safe behaviors apply to all AEI employees who work in administrative support jobs.

- Smoke only in designated areas
- Use safe and defensive driving practices
- Report all injuries illnesses and near misses
- Do not report to work under the influence of alcohol or illegal drugs
- Maintain a safe uncluttered workplace

- Use the right tools
- Identify and correct hazards
- Improve the ergonomics of your tasks, and get help for large tasks
- Do not engage in horseplay and fighting
- Do not bring weapons to the workplace
- Have a personal emergency plan

### ***Safe Behaviors for Technical Support Professionals***

The following safe behaviors apply to all AEI employees who work in technical support jobs.

- Smoke only in designated areas
- Use safe and defensive driving practices
- Report all injuries illnesses and near misses
- Do not report to work under the influence of alcohol or illegal drugs
- Maintain a safe uncluttered workplace
- Use the right tools
- Identify and correct hazards
- Improve the ergonomics of your tasks, and get help for large tasks
- Do not engage in horseplay and fighting
- Do not bring weapons to the workplace
- Have a personal emergency plan
- No facial Hair in areas requiring respiratory protection
- Wear the personal protective equipment or work uniform required for your job

Use fall protection

- Use the prescribed Lockout/Tagout Procedure to control hazardous energy
- Always Sign-in and sign-out of a process Unit/Area
- Obtain required permits before working in a regulated area
- Do not bring ignition sources into a process unit
- Avoid Loose-fitting Clothing and Jewelry
- Report all emergencies
- Carry a Photo ID

## **V. Employee Participation**

Employee participation is an essential part of the HSE protection process. Employees take the lead in completing a job hazard analysis for the tasks associated with their job assignments. Employees also contribute by submitting initial incident reports and by working with AEI and its clients to complete incident investigations. Employees are also encouraged to submit suggestions for improving the HSE protection process and for awareness topics.

## **VI. Disciplinary System**

Discipline is defined as a prescribed conduct or pattern of behavior of self-control that corrects, molds, or perfects the mental faculties or moral character, or behavior in accord with rules of conduct. The disciplinary process at AEI is designed to create an environment where employees are committed to a pattern of behavior that demonstrates a commitment to HSE excellence.

The disciplinary system at AEI is based upon the highly successful non-punitive process developed by Dick Grote at Frito Lay. AEI provides professional staffing to a number of clients in different locations. Since AEI does not directly supervise employees, we must work with the client to establish a relationship and environment where employees take personal responsibility for their behavior, and where AEI and client managers help problem employees become productive players. The responsibility-based approach for handling unacceptable performance and unsafe behaviors is a positive, proven method for getting employees to commit to a pattern of behavior of self-control required for an injury free workplace.

Traditional punitive or progressive disciplinary processes are designed to achieve compliance through a progression of punitive measures based prior history or the significance of the offense. Traditional systems move through verbal warnings, written reprimands, suspensions without pay, and probationary periods until the employee finds compliance better than the punishment. These long-established fear-based approaches instill lots of resentment, with little or no payback in improved performance. Rather than have employees who practice unsafe behaviors up to a personal threshold, AEI expects employees to practice safe behaviors at all times.

Even with the most progressive disciplinary system AEI recognizes that some individuals are unable or unwilling to maintain the self-control of practicing safe behaviors. We accept this as a clear personal decision not to work with AEI or its client companies.

## **VII. Incident Investigation and Reporting**

Report all injuries and illnesses, no matter how small, immediately to AEI management and your client contact. Once the immediate medical issues have been addressed, the injured employee will complete the initial injury report. The employee may request assistance from the safety coordinator in completing the report. As soon as medically possible, an injured employee will assist in defining the root cause of the injury or illness and identify actions to prevent future injuries or illnesses.

The Safety Coordinator will lead or designate a leader to investigate all incidents. If needed the investigation could include a site visit and interviews with effected personnel and witnesses. The investigation will define root causes and corrective actions. Lessons learned for the incident will be communicated to all affected employees.

## **VIII. Job Competency**

AEI provides contract professionals with a variety of job descriptions, each job having client specific requirements. AEI reviews potential employee's backgrounds to ensure they meet the client's specific requirements for jobs and locations. If required by the client the background of any potential employee can be checked through our affiliation with the Houston Area Contractor Safety Council. In general all of AEI's contract professionals fall into one of two broad job categories.

**Administrative Support** – These are primarily inside jobs that do not interact with the process operations at the client facility. These jobs include accounting/purchasing, recruiting related, HR/OD/PR, administrative assistant and business services. Competency is established through resume documentation and references. Any required certifications must be provided by the prospective employee. Employees are trained on the expectations in the employee HSE process and understanding is documented.

**Technical Support** - These are primarily outside or laboratory jobs; but include other inside jobs that do interact with the process operations at the client facility. These jobs include process engineers, technicians, project support, chemists and safety professionals. Competency is established through resume documentation and references. Any required certifications must be provided by the prospective employee. Employees are trained on the expectations in the employee HSE process and understanding is documented. Any client specific competency such as confined space entry or HAZWOPER can be obtained and documented through our affiliation with the Houston Area Contractor Safety Council before work is initiated.

## **IX. Stop Work Authority**

The employee commitment to safety is protected by federal, state and local laws. Employees have the right to request information on safety and health hazards in the workplace, precautions that may be taken, and procedures to be followed if an employee is injured or exposed to toxic substances. They have right to know about the hazards associated with the chemicals they work with, and the safety procedures they need to follow to protect themselves from those hazards.

Federal, state and local laws provide the right and the commitment to safety requires the responsibility to question any instruction which requires you to disobey a safety rule, which puts yourself or someone else in unnecessary danger of serious injury, or requires you to perform a task for which you have not been trained to safely perform.

The commitment to safety includes the expectation that the employee stop work on any task that cannot be completed safely, or when the control of the HSE risk is not clearly established or understood. In the event a stop work action is required employees will take the following actions:

- Notify the client supervisor that work has stopped due to unacceptable HSE risk.
- Identify the specific risk and potential hazards for the client.
- Work with the client to determine how to best mitigate the risk and hazards that were identified.
- Only resume work after all issues and concerns have been addressed.
- Document the stop work intervention and provide a written copy the AEI Safety Coordinator.
- The AEI Safety Coordinator will review the documentation and decide if further investigation is required.
- The AEI Safety Coordinator will follow-up with the client for any lessons learned after a stop work intervention has been initiated and closed.

The stop work intervention is a critical element of the safety commitment, and employees will not be reprimanded for issuing a stop work intervention where work was stopped due to unacceptable HSE risk.

## **X. Training and documentation of understanding**

Prior to a work assignment new employees will be given a copy of the AEI Health, Safety, & Environmental process manual. Initial training on the fundamentals of AEI Health, Safety, & Environmental process will be completed though a web based resource before the initial assignment. Initial training includes a test to ensure employees understand the process and their roles. Initial training is completed by secure login to the AEI website, which also documents the understanding.

Appendices to this manual are designed to provide a more in-depth resource for employee participation in key programs. Each month employees are required to complete web based training on a program defined in the appendices. All programs in the process manual will be reviewed over a 12 month period, and recycled annually.

Prior to an assignment, client specific training in areas such as confined space entry or work permits will be completed in cooperation with Houston area contractor safety council or its affiliates.

## **XI. Performance reviews and Audits**

AEI does not directly supervise employees and therefore will work with the client to establish a relationship where employee performance can be regularly monitored and actions taken to improve performance. The basic safe behaviors for all employees are defined in section IV of this manual. At least once a quarter an AEI representative will review any performance issues with the client. Clients are requested to inform AEI of serious safety violations as soon as possible, and not wait until the quarterly review. Performance discussions with the employee will follow the disciplinary process, and performance goals and expectations will be set.

AEI will complete a physical inspection of the employee's work site annually or on a schedule agreed to by the client. The workplace audit will consider factors such as:

- Housekeeping practices which are the first line of defense for tripping and other common accidents.
- PPE availability and condition
- Hazards and action to mitigate
- Safe and unsafe behaviors

## **XII. HSE Awareness program**

Each month employees are required to login to the AEI website and review the safety training topic for the month. Monthly topics are selected from two sources. The first source is lessons learned from incidents involving AEI employees or at AEI client facilities. The second source of topics is the appendices to this manual.

In addition to AEI monthly safety topics employees are expected to attend and participate in client safety meetings or safety huddles provided for the work group to which they are assigned.

## **XIII. Emergencies**

An emergency situation can arise at any time in any location. Typical emergency situations could include fires, explosions, releases of toxic or flammable gases, vehicle accidents, or severe weather. Employees must report all fire, rescue, hazardous materials incidents, spills, leaks or medical emergencies immediately using the client notification procedure.

Employees must be familiar with the emergency procedures at the facility where they are assigned. During an emergency, employees may be required to evacuate a location or shelter in place. Employees must know the evacuation signal for their specific workplace and the evacuation route. Upon reaching a designated safe area, employees will report their location using the client notification procedure. Employees should not return to work until an all clear has been sounded for the emergency.

Some clients may allow contract professionals such as AEI to be part of the facility emergency response organization. Employees must inform their AEI contact before joining the client organization. Emergency responder must provide documentation to AEWI that they are medically able to meet emergency response requirements and that they have completed and maintained all required training and certifications.

## **XIV. Appendices**

### ***Appendix A, Disciplinary Process***

The dictionary describes discipline as a prescribed conduct or pattern of behavior of self-control that corrects, molds, or perfects the mental faculties or moral character, or behavior in accord with rules of conduct.

AEI provides professional staffing to a number of clients in different locations. AEI does not directly supervise employees and therefore must work with the client to establish a relationship and environment where employees take personal responsibility for their behavior, and where AEI and client managers help problem employees become productive players. The responsibility-based approach for handling unacceptable performance and unsafe behaviors is a positive, proven method for getting employees to establish a pattern of behavior of self-control required for a injury free workplace.

The responsibility-based approach is in direct contrast the long-established system of verbal warnings, written reprimands, suspensions without pay, and probationary periods-all fear-based approaches that instill lots of resentment, with little or no payback in improved performance.

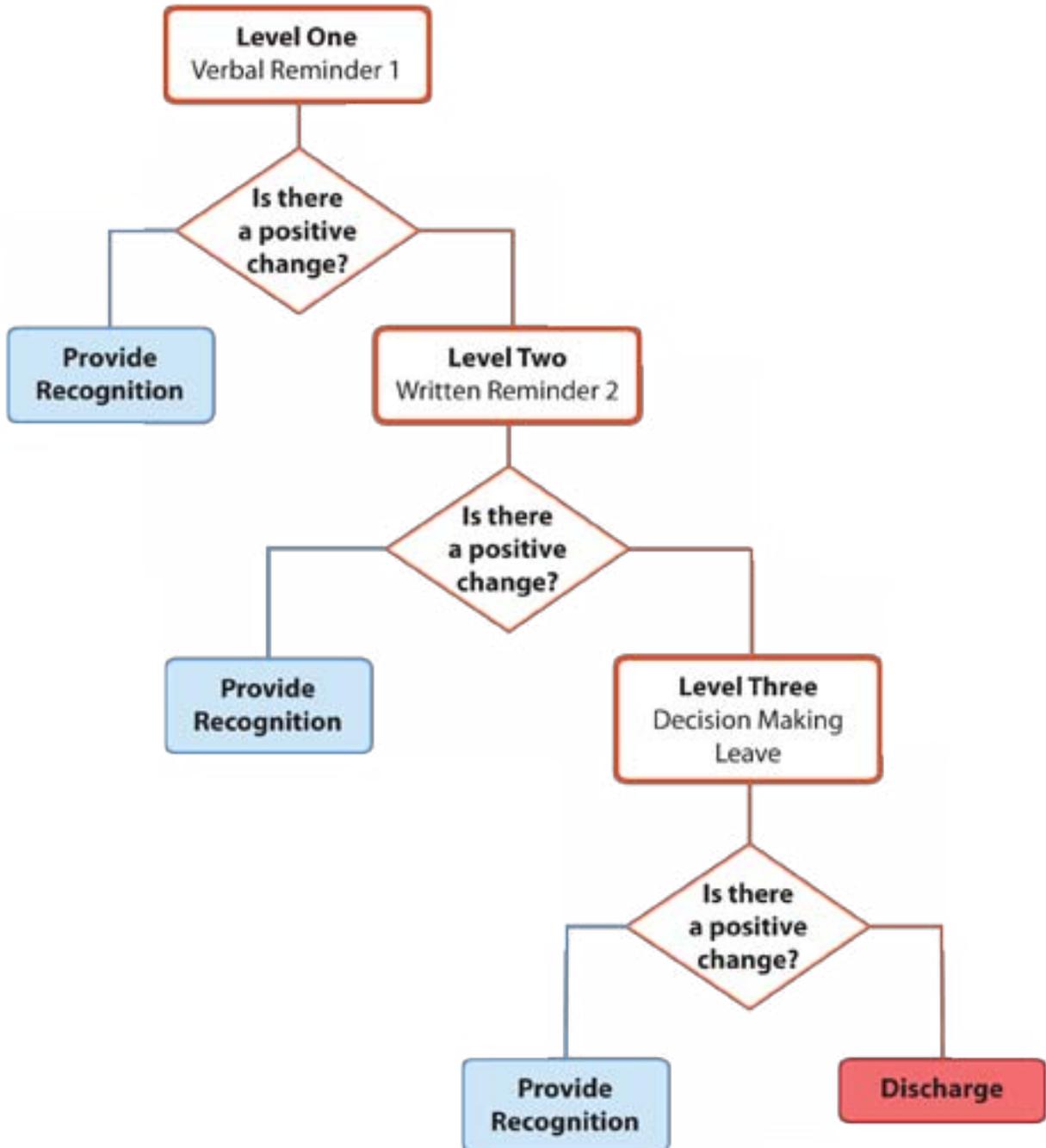
Even with the most progressive disciplinary system AEI recognizes that some individuals are unable or unwilling to maintain the self-control of practicing safe behaviors. We accept this as a clear personal decision not to work with AEI or its client companies.

The AEI employee contact is responsible for any disciplinary action taken by AEI to ensure the commitment to HSE excellence. Disciplinary actions will be initiated for any unsafe behavior as defined in this manual or any violation of a client safety rule.

The responsibility-based approach includes three levels of discussion with the employee to achieve the desired performance standard. At each level it is critical that the unacceptable behavior is clearly defined as well as the alternative acceptable behavior. At each level a commitment by the employee is required.

- Level one is a verbal reminder of the required performance and behavior. The employee must give a verbal commitment to the required performance standard
- Level two is a written reminder of the required performance and behavior that was agreed to in level one.
- At level one or two recognition is given for achieving the required performance.
- At Level three is employee is given a three days of paid leave to determine if he can commit to the required performance and behavior. Any deviation from the agreed performance after this point is accepted as the employee decision to seek alternative employment.

# Disciplinary Process



## ***Appendix B. Behavior Based Safety***

Observations: Safe behaviors are identified for AEI job categories and by each client's requirements. Since AEI does not have onsite supervisors, we must rely on the client's observation of an unsafe behavior. We request that clients report observed unsafe behaviors to the AEI Safety Coordinator as soon as possible.

Feedback: Ideally the client contact will notify the employee of an unacceptable behavior as it happens. The AEI Safety coordinator will discuss the behavior with the employee as soon as possible.

Actions: All unsafe behaviors are subject to the disciplinary process. Feedback discussions are considered to be level one reminders in the disciplinary process. The Safety Coordinator will take the appropriate action within the process to correct the behavior.

Documentation: The observation of unsafe behaviors will be documented by the Safety Coordinator. For the behavior based safety process documentation does not include identification of the employee.

Trends: On a regular periodic basis the Safety Coordinator will review the unsafe behavior documentation to determine if a company wide action is required.

## ***Appendix C. Bloodborne Pathogens***

AEI employees are not assigned to positions where there is occupational exposure to blood or other potentially infectious materials as defined in 29CFR 1910.1030(a). Before any such assignments are accepted by AEI will complete the following:

- Provide training before initial assignment and annual refresher training
- Observe universal precautions
- Develop an exposure control plan
- Ensure access to hand washing facility access, antiseptic solutions or towelettes
- Provide appropriate PPE
- Ensure cleaning of equipment or surfaces after contact with blood or infectious material
- Make hepatitis B vaccine available
- Keep medical records kept 30 years
- Keep training records for no less than 3 years

Employees who use sharps for treatment of chronic illnesses must control and dispose of all sharps in a manner that prevents exposure to others.

## ***Appendix D. Personal Protective Equipment***

The purpose of this guideline is to ensure the employees have knowledge on how to make the proper selection and wear Personal Protective Equipment.

AEI's commitment to an injury free, safe and healthy workplace requires that every employee use the proper Personal Protective Equipment (PPE) provided. Defective or damaged PPE shall not be used

Personal Protective Equipment will be provided, used and maintained in a sanitary and reliable condition wherever it is necessary to prevent injury. Basic level PPE is required for work or visits to worksites inside the battery limits of an operating unit, a dock, or terminal area. Clients may specify other areas where basic PPE is required. Additional personal protective equipment may be required by the client for specific tasks or for entry into specific areas. Basic Personal Protective Equipment requirements include, but are not necessarily limited to the items below:

- Hard hat complying with ANSI Z89.1,-1986. Where there is the exposure of overhead danger from falling objects or from electric shock or burns, protective headwear must be worn. Protective headwear is an approved hard hat that meets the requirements of the American National Standards Institute. Protective headwear will be issued if required. Employees are responsible for using their hard hats while working. In addition, employees must notify their supervisor about a damaged or lost hardhat immediately.
- Safety glasses with side shields complying with ANSI Z87.1, 1989. When there is an exposure to the eyes from flying objects, glare or liquids, protective eyewear is required. Protective eyewear is an approved safety eye protector or safety goggle, which meets the standards of the American National Standards Institute.
- Due to the potential exposure hazards contact lens may not be allowed at some facilities. Employees should check client safety requirements.
- Steel-toed safety shoes or boots complying with ANSI Z41, 1991. You must obtain, at your expense, steel toe boots or shoes if required by the customer. All safety shoes must meet the standards of the American National Standards Institute.
- Closed shoes are required for walking within the client facility, but not in a process area.
- Where there is a flash fire potential, fire retardant clothing (coveralls or shirt & pants) properly buttoned and sleeves rolled down. During a turnaround clients may not require flame retardant clothing is in an operating unit that is completely gas free.
- Hearing protection. Hearing protection (ear canal plugs and/or ear muffs) is required within the battery limits of operating process units, in posted areas, and where noise levels are at or above 85 dBA.
- Hand protection. When there is an exposure to the hands, protective gloves are required. Protective gloves are Leather work gloves and chemical resistive gloves.
- Leather work gloves are required for, but not limited to, employees that have an opportunity of cutting, pinching, hitting, or burning their hands.
- 

Chemical resistive gloves are required for, but not limited to, employees that have an opportunity of spilling hazardous chemicals or corrosive material onto their hands.

- Use Personal fall arrest system whenever working on unprotected elevations of six (6) feet or more above walking/working surface.
- Respiratory Protection Equipment (RPE). Although not included as part of the basic PPE requirement, some locations or tasks may require the use of respiratory protection. When there is the potential of exposure to airborne nuisance dust or particles, disposable dust masks can be used. Cartridge respirators may be required in more severe exposure areas. Where toxic gases could be released positive pressure fresh air should be used.

All Respiratory equipment will be NIOSH-approved. Individuals using respiratory protection will be:

1. Medically qualified to use the device(s)

2. Fit tested with the device(s)
  3. Trained in Respiratory Protection (OSHA §1910.134) and the specific respirator
  4. Clean shaven – no facial hair in the areas of the respirator sealing surface. Individuals working in a process area, dock, or terminal area will be clean shaven (shaved in last 24 hrs) and will not have mutton chops, beards, goatees or long mustaches.
- Within the client facility proper RPE is required to comply with work permit requirements.
  - Hair longer than collar length shall be tied up and covered so not to get caught in moving machinery or interfere with proper fit of personal protective equipment.
  - Do not wear loose-fitting clothing (shirts, pants, head-coverings) jewelry (necklaces, earrings, bracelets) where they could be caught in moving machinery. Rings should not be worn while ascending/descending ladders unless they are covered by adequate hand protection.

### ***Appendix E. Safe and defensive driving***

Safe driving practices include the following:

- AEI employees may drive client owned vehicles on client property “Inside the gate” as long as written permission is granted by the client and approved by AEI in advance.
- AEI employees may not drive vehicles that they own rent or borrow “Inside the gate”.
- When performing client business “outside the gate” employees are permitted to operate their own vehicle.
- AEI employees under influence of alcohol, drugs or certain medication may not operate a vehicle
- Drivers must have a valid driver’s license
- Do not leave vehicles running without driver in the driver’s seat
- Each vehicle occupant must use a seatbelts
- Do not use a cell phone (handheld, hands free or texting) while driving
- Obey all Speed limits and traffic regulations (stop signs, stop lights, etc.)
- Within a client facility keep the radio “off” at all times.
- Only drive on designated roadways.
- Stop for pedestrians in crosswalks
- Do not carry people in the bed of trucks.
- Maintain your vehicle in safe working condition and meet state, federal and local retirements
- Do not add after market window tint on the front, side, rear windshield of any vehicle in excess of legal requirements.
- Follow prescribed Journey Management Plan. ( a journey management plan defines the route, mode and time of travel that minimizes the risk of an accident)
- Always maintain safe distance of two seconds behind another vehicle.

### ***Appendix F. Substance Abuse; Drugs and alcohol***

Do not report to work under the influence of alcohol or illegal drugs. Alcoholic beverages, illegal narcotics, non-doctor prescribed drugs, and controlled substances are not permitted in the workplace. An individual found in possession or under the influence of any of these items will be subject to disciplinary action. In addition, some clients do not allow the use of prescription or over the counter drugs in their workplace. If you have a question, talk to the safety coordinator beforehand.

## **Appendix G. Smoking**

Only smoke in designated areas. Smoking is not allowed within AEI or client facilities, including within vehicles when driven within client facilities. Smoking is allowed in clearly identified designated smoking areas.

## **Appendix H. Fatigue Management**

Fatigue is a state of impairment that can include physical and/or mental elements, associated with lower alertness and reduced performance. Fatigue refers to mental or physical exhaustion that stops a person from being able to function normally. However fatigue is more than simply feeling tired or drowsy. Fatigue is caused by prolonged periods of physical and/or mental exertion without enough time to rest and recover. Fatigue can significantly affect an individual's capacity to function. The side effects of fatigue include decreasing performance and productivity, and increased potential for injuries to occur.

Fatigue is generally associated with:

- spending long periods of time awake
- having an inadequate amount and/or quality of sleep over an extended period

Fatigue management is a shared responsibility between AEI, the client and employees as it involves factors that occur both in and outside of the workplace. If you are experiencing fatigue it is important to identify the factors that are contributing to the fatigue, discuss the issue with management, make changes as required (including sleeping patterns, workload, and lifestyle behaviors), and seek professional help if necessary.

Signs of fatigue include tiredness even after sleep, psychological disturbances, loss of energy, and inability to concentrate. Fatigue can lead to incidents because employees are not alert and are less able to respond to changing circumstances. As well as these immediate problems, fatigue can lead to long-term health problems.

Fatigue results from insufficient rest and sleep between activities (e.g. from poor quality sleep). The inter-related causes of fatigue include:

- the time of day that work takes place
- the length of time spent at work and in work-related duties
- the type and duration of a work task and the environment in which it is performed
- the quantity and quality of rest obtained prior to and after a work period
- activities outside of work, such as family commitments or a second job, and
- Individual factors, such as sleeping disorders.

Acute fatigue is caused by immediate episodes of sleep deprivation; for example, because of long periods of wakefulness from excessively long shifts or night shifts without adequate daytime rest. Ongoing sleep disruption can lead to sleep debt and chronic sleep deprivation, placing individuals in a state of increased risk to themselves and to others. It results in:

- unpleasant muscular weariness
- tiredness in everyday activities, and
- reduced coordination and alertness.

If sleep deprivation continues, work performance can deteriorate even further. Fatigue can result from features of the work and the workplace and from features of an employee's life outside work. Levels of work-related fatigue are similar for different individuals performing the same tasks. Work related fatigue can be assessed and managed at an organizational level. The contribution of non-work-related factors varies considerably between individuals. Non work-related fatigue is best managed by the individual employee.

Work-related causes of fatigue include:

- aspects of the tasks being undertaken (e.g. greater workload within standard shifts)
- roster design (e.g. too many consecutive night shifts)
- Unplanned work, overtime, emergencies, breakdowns and call-outs
- features of the working environment (e.g. noise or temperature extremes) and
- commuting times.

Non work-related causes of fatigue include:

- sleep disruption due to ill family members
- strenuous activities outside work, such as a second job
- sleep disorders
- inappropriate use of alcohol, prescription and illegal drugs, and
- stress associated with financial difficulties or domestic responsibilities.

Fatigue causes an increased risk of incidents because of tiredness and lack of alertness. When employees are fatigued they are more likely to exercise poor judgment and have a slower reaction to signals. This can increase all risks on site because fatigued employees are less able to respond effectively to changing circumstances, leading to an increased likelihood of incidents due to human error. Fatigue can also result in long-term health problems, such as:

- digestive problems
- heart disease
- stress
- harmful drug and alcohol use, and
- mental illness.

AEI management is committed to ensuring the proper control of fatigue risks that might affect the health and safety of those involved in both technical support and administrative support functions. Since many of the issues associated with fatigue can be of a sensitive nature and can be work or non-work related, all discussions with employees will be treated as confidential.

The mental and physical demands of work can contribute to an employee becoming impaired by fatigue in a number of ways. Concentrating for extended periods of time, performing repetitious or monotonous work or performing work that requires continued physical effort can increase the risk of fatigue by producing mental and/or physical tiredness.

The way work is planned and scheduled, the time work is performed and the amount of time worked can increase the risk of fatigue. Scheduling work in a way that fails to allow employees enough time for travel to and from work and/or physically recover and socialize can produce fatigue. Working at times when employees are biologically programmed

to sleep (which can disrupt an employee/worker's body clock) and working for long periods of time can also produce fatigue. Particular issues to look for include:

- night shifts, including the number of consecutive night shifts
- long hours of work in a single shift, or across a shift cycle, or because of on-call duties. this includes travel time, especially for remote sites
- short breaks between or within work shifts
- shift start/finish times (e.g. a start time between 10pm and 6am)
- changes to rosters
- Unplanned work, overtime, emergencies, break downs and call outs.

Working in harsh and/or uncomfortable environmental conditions can contribute to the risk of fatigue in a number of ways. Heat, cold, noise and vibration are some of the environmental conditions that can make employees tire quicker and impair their performance.

Having to travel long distances before or after work is an important potential cause of fatigue.

In addition to the work-related factors that contribute to fatigue, it is important to identify factors that cause fatigue due to sleep deprivation. These include:

- lifestyle: e.g. having caring or child-care responsibilities, voluntary work, having more than one job, level of fitness, social life or diet
- home environment: e.g. noisy neighbors or a bedroom that is too hot or not dark enough for day-time sleep, and
- health conditions: e.g. insomnia, sleep apnea, or alcohol or drug dependence.

A risk management approach to fatigue looks at how fatigue, and long working hours in general, can interact with other workplace hazards. Exposure to some hazards can be increased when working extended hours – e.g. manual tasks and exposure to hazardous chemicals, dust and noise.

If you believe you are subject to fatigue, here are some tips on how to manage the condition.

### ***Sleep***

- The best sleep is night sleep
- If sleeping during the day, darken the room and allow more time than normal to fall asleep
- Choose a quiet, peaceful place to sleep and adhere to a routine
- Seven to eight hours uninterrupted sleep is adequate
- Seek medical advice for excessive snoring, irregular breathing and insomnia

### ***Drugs and alcohol***

- Avoid excessive consumption of alcohol – it affects quality of sleep
- Avoid stimulants – they delay the need for sleep
- Do not consume coffee or tea before going to bed

### ***Medical conditions***

- If you have a medical condition, you should seek advice from your doctor if you are in a job that involves shift work or long working hours
- Tell your employer about any medical conditions that may limit your ability to work or make you susceptible to fatigue
- Ask your doctor for an alternative medication if it causes you drowsiness when you need to be awake

### ***Fitness***

- Maintain a basic level of fitness
- Exercise regularly
- Keep your weight in check – obesity contributes to sleeping disorders

The following tables are designed to help employees to further investigate the causal factors and possible solutions to suspected fatigue. Employees should keep in mind that in their situation the key factors may be individual life choices rather than work related conditions. Table 1 shows several common risk factors for fatigue and aspects to consider. Table 2 includes examples of control measures for various fatigue factors. Table 3 is a three step fatigue assessment guide with risk factors shown as relatively lower or higher factors.

**Table 1: Fatigue risk factors**

**Table 1: Fatigue risk factors**

Risk Factor	Aspects to consider
Mental and physical demands of work	
Repetitive or monotonous work	<ul style="list-style-type: none"> <li>• Do jobs involve repetitive or monotonous work, e.g. haul-truck driving?</li> </ul>
Sustained physical or mental effort	<ul style="list-style-type: none"> <li>• Is the work physically demanding?</li> <li>• Is there time pressure due to a heavy workload?</li> <li>• Is work fast paced?</li> <li>• Is work intensive?</li> <li>• Can employees/workers vary work pace or work tasks as desired?</li> <li>• Have employees/workers been consulted regarding work tasks or how to carry them out?</li> </ul>
Complex physical or mental tasks	<ul style="list-style-type: none"> <li>• Is high vigilance and/or concentration required?</li> <li>• Are there different demands that can be difficult to combine?</li> <li>• Are complex, difficult or strenuous tasks required at the end of shifts or shift cycles?</li> </ul>
Work scheduling and planning	
Night shifts, including the number of consecutive night shifts	<ul style="list-style-type: none"> <li>• Are too many consecutive night shifts worked?</li> <li>• Is more than eight hours work required overnight shift?</li> <li>• Are more than four consecutive 12-hour night shifts worked?</li> <li>• Are more than five consecutive 10-hour night shifts worked?</li> <li>• Are more than six consecutive 8 - hour night shifts worked?</li> <li>• Are tasks requiring sustained physical or mental effort undertaken on night shift?</li> <li>• Are complex physical or mental tasks undertaken on night shift?</li> </ul>

<p>Long hours of work in a single shift. This includes travel time, especially for remote sites</p>	<ul style="list-style-type: none"> <li>• Does one shift involve more than 12 hours in a day (including call outs)?</li> </ul>
<p>Long hours of work across a roster cycle</p>	<ul style="list-style-type: none"> <li>• Do hours of active work (total time spent at work including overtime) exceed 48 hours in any seven days, or 624 hours over a three-month (13 week) period?</li> </ul>
<p>Long hours because of on-call duties</p>	<ul style="list-style-type: none"> <li>• Are there irregular and unplanned schedules as a result of call outs?</li> <li>• Is the working day or working week extended beyond 12 hours in a single day, 48 hours in any seven days, or 624 hours over a three-month (13 week) period as a result of call outs?</li> </ul>
<p>Short breaks between work shifts</p>	<ul style="list-style-type: none"> <li>• Is there enough time between work shifts to allow for adequate sleep?</li> <li>• Enough time in a break for five hours uninterrupted sleep in 24 hours (only for one night); and</li> <li>• Enough time in breaks for 12 hours of sleep in 48 hours and at least six hours in 24 hours; and</li> <li>• Enough time in breaks for 50 hours sleep in seven days?</li> <li>• Is the break between shifts less than 10 hours?</li> <li>• Are there at least two consecutive night time sleep opportunities (48 hours) every seven days?</li> </ul>
<p>Short breaks within work shifts</p>	<ul style="list-style-type: none"> <li>• Are breaks within shifts long enough and frequent enough to allow employees/workers to rest, refresh and nourish themselves?</li> </ul>
<p>Shift start/finish times</p>	<ul style="list-style-type: none"> <li>• Do any shifts start or finish between 10pm and 6am?</li> <li>• Are split shifts required or offered?</li> <li>• Are complex, difficult or strenuous tasks required at the start or end of such shifts?</li> </ul>
<p>Changes to rosters</p>	<ul style="list-style-type: none"> <li>• Do employees/workers get sufficient notice of roster changes?</li> <li>• Is fatigue management taken into account in roster changes?</li> </ul>

Work environment conditions	
Stress	<ul style="list-style-type: none"> <li>• Do jobs involve high demand, but low control?</li> <li>• Are there poor social relations at work, e.g. bullying?</li> <li>• Is there low social support from peers and supervisors at work?</li> <li>• Is there low recognition for the effort involved in the work?</li> </ul>
Adverse working conditions	<ul style="list-style-type: none"> <li>• Do adverse working conditions exist, e.g. exposure to: <ul style="list-style-type: none"> <li>○ Noise?</li> <li>○ Heat?</li> <li>○ Cold?</li> <li>○ Dust?</li> <li>○ Hazardous substances?</li> </ul> </li> </ul>
Excessive commuting times necessary	
	<ul style="list-style-type: none"> <li>• Is significant travel to and from work necessary each day so that time for adequate sleep is reduced?</li> <li>• Are long-distance commutes necessary at the beginning of a work cycle?</li> </ul>
Individual and nonwork factors	
	<ul style="list-style-type: none"> <li>• To what extent is there evidence of problems as a result of: <ul style="list-style-type: none"> <li>○ Family commitments?</li> <li>○ Insufficient quality sleep?</li> <li>○ Sleeping disorders?</li> <li>○ Psychological issues?</li> <li>○ Alcohol and drug use?</li> <li>○ Second job/non-paid work?</li> </ul> </li> </ul>
Effect of exposure during extended shifts	
	<ul style="list-style-type: none"> <li>• Is there significant exposure to hazardous chemicals, dust and noise? (Note that exposure standards may need to be adjusted.)</li> </ul>

**Table 2: Examples of control measures for various fatigue risk factors**

Risk factor	Control measures to consider
<b>Mental and physical demands of work</b>	
<p>These include, for example:</p> <ul style="list-style-type: none"> <li>• repetitive or monotonous work;</li> <li>• sustained physical or</li> <li>• mental effort;</li> <li>• sustained and/or complex physical or</li> <li>• mental tasks</li> </ul>	<ul style="list-style-type: none"> <li>• Re-design jobs to eliminate boring, repetitive tasks</li> <li>• Improve communication</li> <li>• Provide training to allow multi-skilling and effective job rotation</li> <li>• Use alarms and monitors, particularly for solo work (e.g. driving vehicles)</li> <li>• Use plant, machinery and equipment to eliminate or reduce the excessive physical demands of the job</li> <li>• Reduce the amount of time employees need to spend performing sustained physically and mentally demanding work</li> <li>• Ensure there are adequate employees and other resources to do the job without placing excessive demands on staff</li> <li>• Roster enough employees during peak times and demands</li> <li>• Ensure adequate breaks during shifts to allow recovery</li> <li>• Allow supervisors and employees to reschedule tasks if fatigue becomes a problem</li> <li>• Ensure work demands gradually increase towards the middle of the shift and decrease towards the end</li> <li>• Eliminate sources of risks that might exacerbate fatigue (e.g. lack of job control manual handling, extremes of temperature)</li> <li>• Improve communication processes</li> <li>• Improve the duration and timing of work</li> <li>• Ensure safe and efficient shift hand-over</li> </ul>

<b>Work scheduling and planning</b>	
<p>Night shifts, including the number of consecutive night shifts</p>	<ul style="list-style-type: none"> <li>• Eliminate or limit night work where possible</li> <li>• Eliminate the use of night shifts for particular jobs or activities</li> <li>• Schedule complex tasks for daytime</li> <li>• Schedule work for hours when the risks may be lower – for example, complex and safety-critical tasks are best undertaken during normal day shifts when employees/workers are less likely to be fatigued, rather than during low body clock periods (i.e. don't schedule tasks between 2am and 6am and, to a lesser degree, between 2pm and 4pm)</li> <li>• Avoid scheduling higher risk tasks on the first night of a night-shift cycle. If unavoidable, when planning the task consider additional controls such as job rotation or additional rest breaks</li> <li>• Minimize or redesign routine administrative tasks to ensure employees/workers can focus on core duties during their night work</li> <li>• Limit the number of consecutive night shifts worked – no more than four night shifts in a row</li> <li>• Allow regular night-shift employees/workers periods of normal night's sleep to catch up on their sleep deficit</li> <li>• Ensure that rosters allow for at least two full night's sleep after the last night shift</li> <li>• Arrange shifts so that day sleep is adequate</li> <li>• Use a forward-rotation shift system (i.e. morning to afternoon, afternoon to night)</li> <li>• Improve the order, speed, direction and length of rotation of the shift cycle</li> <li>• Except for emergencies, give at least 24 hours' notice before night work. Consider providing a longer period of notice so that employees/workers have time to adjust their activities</li> <li>• Allow for naps during night shifts</li> </ul>

<p>Long hours of work in a single shift. This includes travel time, especially for remote sites</p>	<ul style="list-style-type: none"> <li>• Reduce working hours</li> <li>• Increase resourcing</li> <li>• Eliminate the use of extended hours for particular jobs or activities</li> <li>• Control the length of shifts</li> <li>• Limit the use of overtime, especially unscheduled overtime</li> <li>• Monitor hours of work</li> <li>• Provide alternative transport at end of overtime/long shift</li> </ul>
<p>Long hours of work across a shift cycle</p>	<ul style="list-style-type: none"> <li>• Develop a working-hours policy on daily work hours, maximum average weekly hours, total hours over a three-month period and work-related travel</li> <li>• Reduce working hours</li> <li>• Reduce the number of consecutive day shifts that can be worked</li> <li>• Eliminate or reduce the need to work long shifts for more than four consecutive days</li> <li>• Allocate shift employees/workers consecutive days off, including some weekends, depending upon their fatigue-risk level</li> <li>• Avoid working arrangements that provide incentives to work excessive hours</li> <li>• Control overtime, shift swapping and on-call duties</li> <li>• Offer alternatives to employees/workers who may have difficulties adjusting to working hours</li> </ul>
<p>Long hours because of on call duties</p>	<ul style="list-style-type: none"> <li>• Limit use of standby and on-call duties</li> <li>• Ensure that exchange of shifts does not result in excessive hours</li> <li>• Ensure that responding to emergencies does not result in excessive hours</li> </ul>
<p>Short breaks between work shifts</p>	<ul style="list-style-type: none"> <li>• Increase the length of breaks between shifts</li> <li>• Allow for recovery between work periods</li> <li>• Defer non-urgent work to allow appropriate rest and recuperation for employees/workers</li> <li>• Provide rest days (opportunity for two consecutive night sleeps)</li> <li>• Improve the timing of shifts</li> <li>• Allow for family and social commitments between shifts and shift cycles</li> <li>• Make sure that there is enough time in a break for six hours uninterrupted sleep</li> </ul>

Short breaks within work shifts	<ul style="list-style-type: none"> <li>• Provide more and/or longer breaks to allow for recovery within work periods</li> <li>• Provide adequate resources to cover breaks</li> <li>• Ensure adequate number and location of crib and toilet facilities</li> <li>• Reduce the use of split shifts</li> <li>• Where split shifts are used, arrange timing so sleep of employees is not disrupted due to the times they are required to work</li> </ul>
Shift start/finish times	<ul style="list-style-type: none"> <li>• Don't start or finish between 10pm and 6am</li> <li>• Ensure time for adequate communication at shift handovers</li> <li>• Match shift times to the availability of public transport</li> </ul>
Changes to rosters	<ul style="list-style-type: none"> <li>• Set shift rosters ahead of time and avoid sudden changes of shifts to allow employees/workers to plan leisure time</li> <li>• Reduce irregular and unpredictable work schedules</li> <li>• Manage workload and work-pace change caused by machinery breakdowns and planned and unplanned absences</li> <li>• Allow for family and social commitments within the roster cycle</li> </ul>
<b>Work environment conditions</b>	
Stress	<ul style="list-style-type: none"> <li>• Improve job control and the other risk factors associated with stress</li> <li>• Ensure opportunities to clarify stress-related issues</li> </ul>
Adverse physical conditions	<ul style="list-style-type: none"> <li>• Avoid working during periods of extreme temperature</li> <li>• Control exposure to hazardous substances and environments</li> <li>• Provide effective protective clothing and equipment, allowing for different shifts</li> <li>• Use heating and cooling to control ambient temperatures to support alertness</li> <li>• Provide adequate facilities for rest, sleep, meal breaks, onsite accommodation (if appropriate) and other essential requirements, such as bathroom facilities</li> <li>• Install adjustable, vibration-free seats in appropriate machinery and vehicles</li> <li>• Ensure the workplace and surroundings are well lit, safe and secure</li> </ul>

<p><b>Excessive commuting times necessary</b></p>	
	<ul style="list-style-type: none"> <li>• Start work at long distance commute sites on the day after arrival and start travel home on the day after the shift cycle is finished</li> <li>• Assist with travel arrangements, e.g. provide transport</li> <li>• Reduce active working time to account for long commuting time or distance</li> </ul>
<p><b>Individual and nonwork factors</b></p>	
	<ul style="list-style-type: none"> <li>• Provide suitable professional advice, e.g. an employee assistance program, sleep disorder clinic</li> <li>• Maintain vigilance in identifying non-work related factors</li> <li>• Subsidize modifications to private homes to improve sleeping conditions (e.g. air conditioning)</li> <li>• Provide information and education about how non-work related factors can increase the risks of fatigue</li> <li>• Provide a mechanism to encourage employees/workers to report non-work factors that might affect fatigue management</li> </ul>
<p><b>Effect of exposure during extended shifts</b></p>	
	<ul style="list-style-type: none"> <li>• Employees/workers who perform repetitive manual tasks should have regular rest breaks</li> <li>• Ensure exposures are carefully monitored and exposure levels adjusted. For example, exposure during a 10-hour shift may not</li> </ul>

<p><b>Step 1. Identify potential hazard factors at the workplace/industry, such as those listed in the column below. Consider hazard factors in the context of specific workplace circumstances.</b></p>	<p><b>Step 2. To assist risk assessment, a general level of risk for each hazard factor is indicated along arrow guides. In assessing risk: consider interaction between hazard factors that could influence level of risk; and as level of risk for each hazard factor is only indicative, take into account specific workplace/industry circumstances that may influence it.</b></p> <p><b>Where the assessed risk falls into the area of medium/higher risk, undertake Step 3.</b></p>	<p><b>Step 3. Where a hazard factor is assessed as medium/higher risk, consider implementing control measures, such as those outlined in ‘controlling fatigue risks’ in this guide. Control measures</b></p>
<p><b>Hazards</b></p>	<p>Lower Risk</p> <p style="text-align: center;"><b>General risk indicator for hazards</b></p> <p>Higher Risk</p>	
<p><b>MENTAL AND PHYSICAL WORK DEMANDS</b></p>		
<p>Repetition (physical and/or mental)</p>	<p>Varying task demands</p> <p>Highly repetitive work and/or high concentration work, with high demands over an extended period of time</p>	<p>See Table 2</p>
<p>Physical</p>	<p>Minimal physically demanding work</p> <p>Highly physically demanding work that results in muscle fatigue</p>	<p>See Table 2</p>
<p>Mental</p>	<p>Minimal periods of high concentration and/or mentally demanding work</p> <p>Long periods of high concentration and/or mentally demanding work</p>	<p>See Table 2</p>
<p><b>WORK SCHEDULING AND PLANNING HOURS</b></p>		
<p>Average weekly hours</p>	<p>35-40 hours (working week)</p> <p>48 hours (working week)</p> <p>56 hours (working week)</p>	<p>See Table 2</p>

Total hours over a three-month period	624 working hours	See Table 2
Daily work hours	9 working hours	See Table 2
Daily work hours and work-related travel	10 working hours	See Table 2
Scheduling of work	Regular and predictable hours	See Table 2
	Irregular and unpredictable hours, short notice of schedule, extended overtime, on call across shift cycle	See Table 2
<b>WORK SCHEDULING AND PLANNING SHIFT WORK</b>		
Length of shift	10 hours	See Table 2
Time of shift	Day shifts	See Table 2
	Afternoon shifts	See Table 2
	Night shifts	See Table 2
Speed and direction of shift	Forward rotation (morning/afternoon/night)	See Table 2
	Backward rotation (night/evening/morning)	See Table 2
	Slower rotation (e.g. weekly rotation / 3-4 weekly rotation)	See Table 2
Split shifts/variable shifts	13 hour period	See Table 2
<b>WORK SCHEDULING AND PLANNING NIGHT WORK</b>		
Shift end (for those working eight hours or more between 10.00pm and 6.00am)	After 10.00 pm	See Table 2
	Before 6.00 am	See Table 2
Length of shift	8 hours	See Table 2
	10 hours	See Table 2
	12 hours	See Table 2

Sequential night shifts	6 or more 8 hour shifts 5 or more 10 hours shifts 4 or more 12 hours shifts	See Table 2
Period of non-work following a sequence of night shifts	48 hours Less than 48 hours	See Table 2
Breaks during work - frequency	Adequate and regular breaks Infrequent or no breaks	See Table 2
Breaks between work periods - recovery time Seasonal work arrangements - hours worked	Adequate time for sleep, travel and meals, etc. Inadequate time for sleep, travel and meals, etc. Regular hours over 12 months Long hours during peak season	See Table 2 See Table 2 See Table 2
<b>ENVIRONMENTAL CONDITIONS</b>		
Exposure to hazardous substances and atmospheric contaminants	For hazardous substances, low risk calculated using national exposure standard	See Table 2
Exposure to noise	Less than 85 dba over 8 hours Greater than 85 dba over 8 hours	See Table 2
Exposure to extreme temperatures	Minimal exposure Long period exposure	See Table 2
Exposure to vibration	Minimal exposure Long period exposure	See Table 2
<b>INDIVIDUAL AND NON-WORK FACTORS</b>		
Sleep (amount and quality)	Night sleep 8 hours night sleep (in 24 hours)	See Table 2
Health	Day sleep 6 hours night sleep (in 24 hours) Poor diet, Recent illness/injury, Sleep disorders	See Table 2

Fitness for work	Influence of alcohol, drugs or amount of sleep	See Table 2
Lifestyle factors	Activities/responsibilities that limit amount of sleep, e.g. second job or long commuting distance	See Table 2

## **Appendix I. Injury and Illness Treatment Guidelines**

It is important that you report all accidents and incidents that result in injury, illness, or damage (however slight), to your customer contact immediately, followed by a call to AEI. These communications will help AEI learn how to prevent incidents from occurring in the future. It is AEI's responsibility to investigate each incident, and your responsibility to report them when they occur.

AEI provides a First Aid Kit on the premises. It is there for your use in the treatment of personnel injuries such as: minor scratches, minor burns, headaches, nausea, etc. Ask your supervisor to show you its location. Let your supervisor know if you need to use the First Aid Kit in order to keep the inventory list of the contents current.

If you have a work related injury or illnesses that requires professional medical assistance, notify AEI and your customer contact and let us know before you receive this assistance.

### **Minor First Aid Treatment**

If you sustain an Injury or are involved in an accident requiring minor first aid

- Inform your supervisor.
- Administer first aid treatment to the injury or wound. (Remember the person who treats you must be trained (U.S. Bureau of Mines, American Red Cross or equivalent) in first aid procedures with training by verified and documented.
- If a first aid kit is used, indicate usage on the accident investigation report.
- Access to a first aid kit is not intended to be a substitute for medical attention.
- Provide details for the completion of the accident investigation report.
- Eye wash should be provided by client in areas where corrosives stored.

### **Emergency Medical Treatment**

In all cases requiring emergency medical treatment, immediately call, or have a co-worker call, to request emergency medical assistance. If you have or you witness a severe injury requiring emergency treatment:

- Call for help and seek assistance from a co-worker.
- Use the emergency telephone numbers and instructions posted next to the telephone in your work area to request assistance and transportation to the local hospital emergency room.
- Provide details for the completion of the accident investigation report.
- AEI employees are not trained in the knowledge of Emergency Medical Treatment procedures and therefore, are instructed to seek professional help in lieu of responding individually to prevent the injured from sustaining further injuries.

### **Non-Emergency Medical Treatment**

For non-emergency work-related injuries requiring professional medical assistance other than first aid:

- Inform AEI and your customer contact prior to treatment.
- Proceed to the posted medical facility. Your AEI representative will assist with transportation, if necessary.
- Provide details for the completion of the accident investigation report.

## Appendix J. Fire Protection/ Extinguishers

Fire prevention is an important commitment to safety for all AEI employees. Employees should not bring lighters, matches or other ignition sources into a process unit, terminal or dock. In addition, employees should not use ordinary, non-intrinsically safe electronic devices (cell phones, beepers, cameras, music players, etc) inside the battery limits of a process unit, docks or terminal operating areas. Ordinary, non-intrinsically safe electronic devices can be an ignition source. Only intrinsically safe devices may be used in these areas without a Hot Work Permit.

Good housekeeping is another important aspect of fire prevention. Combustible materials should be properly disposed of, and not allowed to accumulate to become the hazard of a fuel source.

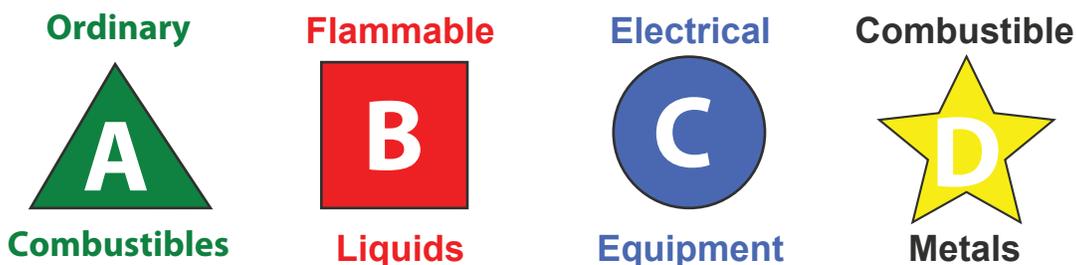
Unless approved by AEI management, employees are not part of the client fire brigade. However employees can take actions during the incipient stage of a fire. The incipient stage fire means a fire which is in the initial or beginning stage and which can be controlled or extinguished by portable fire extinguishers, Class II standpipe or small hose systems without the need for protective clothing or breathing apparatus.

Client facilities should provide portable fire extinguishers for employee use. They should be mounted, located and identified so workers can access them without subjecting themselves to possible injury.

Fire extinguishers are classified to designate the class or classes of fire on which an extinguisher will be effective.

- **“Class A fire”** means a fire involving ordinary combustible materials such as paper, wood, cloth, and some rubber and plastic materials
- **“Class B fire”** means a fire involving flammable or combustible liquids, flammable gases, greases and similar materials, and some rubber and plastic materials.
- **“Class C fire”** means a fire involving energized electrical equipment where safety to the employee requires the use of electrically nonconductive extinguishing media.
- **“Class D fire”** means a fire involving combustible metals such as magnesium, titanium, zirconium, sodium, lithium and potassium.
- **“Class K Fire”** means a fire involving cooking oils and fats

Fire extinguisher will be marked for the class of fire they are designed to handle.



- **Class A** – ordinary combustibles (wood, cloth, paper)
- **Class B** – flammable liquids, gases, greases
- **Class C** – energized electrical equipment
- **Class D** – combustible metals

Portable Fire Extinguishers must maintain in a fully charged and operable condition, and kept in their designated places at all times except during use. Annual maintenance checks must be recorded and retained for one year after the last entry or the life of the shell, whichever is less. Extinguisher should be visually inspected monthly.

Where portable fire extinguishers have been provided for employee use in the workplace, employees must be provided with an educational program on the:

- General principles of fire extinguisher use
- Hazards of incipient (beginning) stage fire fighting

Employees designated to use extinguishers must receive instruction and hands-on practice in the operation of equipment

**Appendix K. Hazard prevention and control**

Guns, explosives, chemical, radioactive, biological or viral weapons are unacceptable hazards that are not allowed in the workplace. Employees may carry folding knives with blades less than 4 inches.

We encourage employees to use the information in this appendix to analyze their own jobs, identify workplace hazards, and take appropriate action to prevent injury.

A hazard is the potential for harm. In practical terms, a hazard often is associated with a condition or activity that, if left uncontrolled, can result in an injury or illness. Identifying hazards and eliminating or controlling them as early as possible will help prevent injuries and illnesses. Common hazards and descriptions include the following:

Hazards	Hazard Descriptions
Chemical (Toxic)	A chemical that exposes a person by absorption through the skin, inhalation, or through the bloodstream that causes illness, disease, or death. The amount of chemical exposure is critical in determining hazardous effects. Check Material Safety Data Sheets (MSDS), and/or OSHA 1910.1000 for chemical hazard information.
Chemical (Flammable)	A chemical that, when exposed to a heat ignition source, results in combustion. Typically, the lower a chemical's flash point and boiling point, the more flammable the chemical. Check MSDS for flammability information.
Chemical (Corrosive)	A chemical that, when it comes into contact with skin, metal, or other materials, damages the materials. Acids and bases are examples of corrosives.
Explosion (Chemical Reaction)	Self explanatory.
Explosion (Over Pressurization)	Sudden and violent release of a large amount of gas/energy due to a significant pressure difference such as rupture in a boiler or compressed gas cylinder.

Electrical (Shock/Short Circuit)	Contact with exposed conductors or a device that is incorrectly or inadvertently grounded, such as when a metal ladder comes into contact with power lines. 60Hz alternating current (common house current) is very dangerous because it can stop the heart.
Electrical (Fire)	Use of electrical power that results in electrical overheating or arcing to the point of combustion or ignition of flammables, or electrical component damage.
Electrical (Static/ESD)	The moving or rubbing of wool, nylon, other synthetic fibers, and even flowing liquids can generate static electricity. This creates an excess or deficiency of electrons on the surface of material that discharges (spark) to the ground resulting in the ignition of flammables or damage to electronics or the body's nervous system.
Electrical (Loss of Power)	Safety-critical equipment failure as a result of loss of power.
Ergonomics (Strain)	Damage of tissue due to over exertion (sprains and strains) or repetitive motion.
Ergonomics (Human Error)	A system design, procedure, or equipment that is error-provocative. (A switch goes up to turn something off).
Excavation (Collapse)	Soil collapse in a trench or excavation as a result of improper or inadequate shoring. Soil type is critical in determining the hazard likelihood.
Fall (Slip, Trip)	Conditions that result in falls (impacts) from height or traditional walking surfaces (such as slippery floors, poor housekeeping, uneven walking surfaces, exposed ledges, etc.)
Fire/Heat	Temperatures that can cause burns to the skin or damage to other organs. Fires require a heat source, fuel, and oxygen.
Mechanical/Vibration (Chaffing/Fatigue)	Vibration that can cause damage to nerve endings, or material fatigue that results in a safety-critical failure. (Examples are abraded slings and ropes, weakened hoses and belts.)
Mechanical Failure	Self explanatory; typically occurs when devices exceed designed capacity or are inadequately maintained.
Mechanical	Skin, muscle, or body part exposed to crushing, caught-between, cutting, tearing, shearing items or equipment.
Noise	Noise levels (>85 dBA 8 hr. TWA) that result in hearing damage or inability to communicate safety-critical information.
Radiation (Ionizing)	Alpha, Beta, Gamma, neutral particles, and X-rays that cause injury (tissue damage) by ionization of cellular components.
Radiation (Non-Ionizing)	Ultraviolet, visible light, infrared, and microwaves that cause injury to tissue by thermal or photochemical means.
Struck By (Mass Acceleration)	Accelerated mass that strikes the body causing injury or death. (Examples are falling objects and projectiles.)

Struck Against	Injury to a body part as a result of coming into contact of a surface in which action was initiated by the person. (An example is when a screwdriver slips.)
Temperature Extreme (Heat/Cold)	Temperatures that result in heat stress, exhaustion, or metabolic slow down such as hypothermia.
Visibility	Lack of lighting or obstructed vision that results in an error or other hazard.
Weather Phenomena (Snow/Rain/Wind/Ice)	Self-explanatory.

One of the best ways to determine and establish proper work procedures is to conduct a job hazard analysis. A job hazard analysis is one component of the larger commitment of a safety and health management system. A job hazard analysis is a technique that focuses on job tasks as a way to identify hazards before they occur. It focuses on the relationship between the worker, the task, the tools, and the work environment. Ideally, after you identify uncontrolled hazards, you will take steps to eliminate or reduce them to an acceptable risk level.

A job hazard analysis can benefit every job. Jobs that have a history of injury or have the potential to cause severe or disabling injuries or illness have the greatest need. New jobs or complex jobs should also be prioritized for a job hazard analysis. Periodically reviewing the job hazard analysis ensures that it remains current and continues to help reduce workplace accidents and injuries. Even if the job has not changed, it is possible that during the review process you will identify hazards that were not identified in the initial analysis.

The best person to do a job hazard analysis is the employee doing the job. They have a unique understanding of the job, and this knowledge is invaluable for finding hazards. Incident and injury reports will be used to identify areas where a JHA is needed.

**A JHA can be initiated at any time. If any hazards exist that pose an immediate danger to an employee's life or health, take immediate action to protect the worker. Do not wait until the JHA is completed.**

## COMPLETING A JHA

Outline the steps or tasks. When beginning a job hazard analysis, list each step of the job and record enough information to describe each job action without getting overly detailed. However, avoid making the breakdown of steps so detailed that it becomes unnecessarily long or so broad that it does not include basic steps. Remember you are evaluating the job itself, not the employee's job performance.

Identify the workplace hazards.

To perform a job hazard analysis, you would ask:

What can go wrong? The worker's hand could come into contact with a rotating object that "catches" it and pulls it into the machine.

- **What are the consequences?** The worker could receive a severe injury and lose fingers and hands.
- **How could it happen?** The accident could happen as a result of the worker trying to clear a snag during operations or as part of a maintenance activity while the pulley is operating. Obviously, this hazard scenario could not occur if the pulley is not rotating.

- **What are other contributing factors?** This hazard occurs very quickly. It does not give the worker much opportunity to recover or prevent it once his hand comes into contact with the pulley. This is an important factor, because it helps you determine the severity and likelihood of an accident when selecting appropriate hazard controls. Unfortunately, experience has shown that training is not very effective in hazard control when triggering events happen quickly because humans can react only so quickly.
- **How likely is it that the hazard will occur?** This determination requires some judgment. If there have been “near-misses” or actual cases, then the likelihood of a recurrence would be considered high. If the pulley is exposed and easily accessible, that also is a consideration. In the example, the likelihood that the hazard will occur is high because there is no guard preventing contact, and the operation is performed while the machine is running. By following the steps in this example, you can organize your hazard analysis activities.

### **Correct or prevent the hazards.**

After reviewing the list of hazards, consider what control methods will eliminate or reduce them. The most effective controls are engineering controls that physically change a machine or work environment to prevent employee exposure to the hazard. The more reliable or less likely a hazard control can be circumvented, the better. If this is not feasible, administrative controls may be appropriate. This may involve changing how the employee does their jobs.

The order of precedence and effectiveness of hazard control is the following:

1. Engineering controls.
2. Administrative controls.
3. Personal protective equipment.

Engineering controls include the following:

- Elimination/minimization of the hazard -- Designing the facility, equipment, or process to remove the hazard, or substituting processes, equipment, materials, or other factors to lessen the hazard;
- Enclosure of the hazard using enclosed cabs, enclosures for noisy equipment, or other means;
- Isolation of the hazard with interlocks, machine guards, blast shields, welding curtains, or other means; and
- Removal or redirection of the hazard such as with local and exhaust ventilation.

Administrative controls include the following:

- Written operating procedures, work permits, and safe work practices;
- Exposure time limitations (used most commonly to control temperature extremes and ergonomic hazards);
- Monitoring the use of highly hazardous materials;
- Alarms, signs, and warnings;
- Buddy system; and
- Training.

Personal Protective Equipment -- such as respirators, hearing protection, protective clothing, safety glasses, and hardhats -- is acceptable as a control method in the following circumstances:

- When engineering controls are not feasible or do not totally eliminate the hazard;
- While engineering controls are being developed;
- When safe work practices do not provide sufficient additional protection; and
- During emergencies when engineering controls may not be feasible.

Use of one hazard control method over another higher in the control precedence may be appropriate for providing interim protection until the hazard is abated permanently. In reality, if the hazard cannot be eliminated entirely, the adopted control measures will likely be a combination of all three items instituted simultaneously.

### Sample Job Hazard Analysis Form

Job Title: J	Job Location: A	Analyst D	Date
Task # T	Task Description:		
Hazard Type: H	Hazard Description:		
Consequence: H	Hazard Controls:		
Rational or Comment:			

## Example Job Hazard Analysis Form

<b>Job Location:</b> Metal Shop	<b>Analyst:</b> Joe Safety	Date:
<b>Task Description:</b> Worker reaches into metal box to the right of the machine, grasps a 15-pound casting and carries it to grinding wheel. Worker grinds 20 to 30 castings per hour.		
<b>Hazard Description:</b> Picking up a casting, the employee could drop it onto his foot. The casting's weight and height could seriously injure the worker's foot or toes.		
<b>Hazard Controls:</b>		
<ol style="list-style-type: none"> <li>1. Remove castings from the box and place them on a table next to the grinder.</li> <li>2. Wear steel-toe shoes with arch protection.</li> <li>3. Change protective gloves that allow a better grip.</li> <li>4. Use a device to pick up castings.</li> </ol>		
<b>Task Description:</b> Worker reaches into metal box to the right of the machine, grasps a 15-pound casting and carries it to grinding wheel. Worker grinds 20 to 30 castings per hour.		
<b>Hazard Description:</b> Castings have sharp burrs and edges that can cause severe lacerations.		
<b>Hazard Controls:</b>		
<ol style="list-style-type: none"> <li>1. Use a device such as a clamp to pick up castings.</li> <li>2. Wear cut-resistant gloves that allow a good grip and fit tightly to minimize the chance that they will get caught in grinding wheel.</li> </ol>		
<b>Task Description:</b> Worker reaches into metal box to the right of the machine, grasps a 15-pound casting and carries it to grinding wheel. Worker grinds 20 to 30 castings per hour.		
<b>Hazard Description:</b> Reaching, twisting, and lifting 15-pound castings from the floor could result in a muscle strain to the lower back.		
<b>Hazard Controls:</b>		
<ol style="list-style-type: none"> <li>1. Move castings from the ground and place them closer to the work zone to minimize lifting. Ideally, place them at waist height or on an adjustable platform or pallet.</li> <li>2. Train workers not to twist while lifting and reconfigure work stations to minimize twisting during lifts.</li> </ol>		

## **Appendix L. Ergonomics**

Ergonomics is the study of work and the physical work environment. It involves fitting the workstation to the person who uses it to create an ergonomically correct workstation.

An ergonomically correct workstation will help to prevent bodily injuries that occur over time due to poor posture, repetitive motion, poor workstation design, or improper lifting.

Common injuries occur to fingers, hands, wrists, elbows, upper arm/shoulder, back and eyes. Although some injuries are only short-term, many result in long-term damage, which are known as cumulative trauma disorders such as carpal tunnel syndrome, tendonitis, chronic back pain or eye strain.

Symptoms of common ergonomically related problems include localized pain, numbness, tingling sensation, stiffness, swelling, loss of coordination, deep ache in muscles, weakness, focusing problems, headaches and double vision. If you experience any of these symptoms over a period of time, please contact your supervisor to fill out a "First Report of Injury" form and see a physician. Although not all aches are Cumulative Trauma Disorders, early intervention is the key for effective treatment.

Early actions to improve workstation ergonomics can eliminate the hazards of cumulative trauma disorders.

### **USE CORRECT POSTURE**

1. Two types of posture cause fatigued muscles and can lead to pain and damage.
  - Awkward posture: an unnatural, uncomfortable position
  - Static posture: sitting in a fixed position for a prolonged time period
2. Your goal is to have a neutral posture that will allow your head, neck and back to be in alignment.

You may need to adapt your workstation to allow for proper posture. Good posture is easy to identify. Have a co-worker look at your posture while you are seated at your workstation. Correct posture includes:

- Head positioned comfortably above spine
- Neck elongated and full
- Shoulders relaxed and back
- Chest slightly forward
- Lower back tucked in
- Feet rest flat on floor

### **MINIMIZE REPETITIVE MOTION**

Tasks that require repetitive motion may not seem risky, but damage can occur over time. Examples include typing, reaching, or twisting. You can reduce repetitive motion by:

- Rearranging the workstation so that frequently used items, such as the phone or printer, are close by.
- Combining tasks to eliminate unnecessary steps, such as extra reaching and twisting.
- If you cannot change a task to reduce repetition, make sure that you take frequent mini-breaks. Just a quick stretch will allow muscles to relax.

## **DESIGN AN APPROPRIATE WORKSTATION**

Sitting in a chair is two times harder on your back than standing. Adjust your chair so that you can sit in a neutral posture. Proper chair adjustment will decrease the risk of back pain and muscle fatigue.

### **Chairs**

- Adjust the chair height to be comfortable relative to the work surface height. Also, try to minimize bending and reaching by setting the chair at an appropriate height.
- Adjust the backrest so that the chair will support your lower back, which is called the lumbar spine. You may need to use a lumbar support pad if your chair does not provide adequate back support.
- Adjust the seat pan so that it is tilted slightly backward to make sure you sit all the way back in the chair. Do not allow the chair's edge to place excess pressure behind the knee.
- Your feet should rest comfortably flat on the floor with your knees bent at a 90 - 110° angle. If your feet cannot reach to rest on the floor, you should use a foot rest.

### **Computer Monitors**

Proper adjustment of your monitor can help to minimize your chance for neck muscle aches and eye strain.

- Position the monitor directly in front of you.
- Position the top of the monitor either at or just below eye level.
- Adjust the monitor so that the distance from your eyes to the screen is between 18 - 30 inches.

If you wear bifocals or trifocal lenses, check with your doctor to make sure they are appropriate for computer work.

### **Lighting**

- Proper lighting at your workstation is essential.
- Glare on the monitor is a major cause of eye strain. A glare will look like bright blotches of light on your screen.
- Sources of glare:
  - Windows
  - Lamps
  - Overhead lights,
  - Extreme screen contrast

### **Keyboards**

Proper keyboard placement, along with hand and wrist alignment, will help to minimize the chance for an injury to occur. In addition, touching the keys lightly when typing and using two hands for double key operations will help to minimize strain on the hands and wrists. Using a padded wrist rest in front of your keyboard will help to keep your hands, wrists, and forearms in alignment while you type. Adjust your keyboard to proper fit.

- While sitting in your chair, bend your arms at a 90 - 110° angle keeping your elbows tucked in to your sides.
- Position the keyboard so that it is approximately at the height of your elbows and directly in front of you.
- Place your hands on the home keys. Your hands, wrists, and forearms should be in alignment and parallel to the floor.
- Adjust your chair height if necessary. If your feet are not flat on the floor after adjusting your chair, obtain a foot rest.

## **Mouse**

As with any repetitive motion, extended use of a mouse can cause injury in your hands and wrists.

- Position your mouse at the same height as your keyboard and within normal reach.
- Be sure to keep the trackball clean for efficient use and less strain on your hand and wrist.
- Take mini-breaks. Stretch your hand and wrist during periods of extended use to relieve tension.

## **Document Holder**

- Use a document holder when doing data entry to keep your neck and shoulder muscles from getting fatigued.
- Documents should be positioned at the same height and adjacent to the screen.

## **UTILIZE PROPER LIFTING TECHNIQUES**

Using improper technique to lift heavy objects can cause back pain. Even if you do not lift often, use proper technique when you do lift objects in order to prevent injuries.

- Stand close to the object.
- Stagger your feet and bend at the knees to lower yourself to the level of the object.
- Grip the object and use your leg muscles to lift.
- If you need to turn, pivot with your feet. Do not twist.
- When walking, take small strides.
- When at your destination, stagger your feet, bend at the knees and slowly lower the object to the desired space.

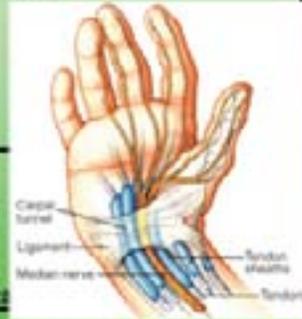
## **EXERCISE REGULARLY**

What are five things you can do to prevent injuries:

- 1. Use correct posture**
- 2. Minimize repetitive motion**
- 3. Design an appropriate workstation**
- 4. Utilize proper lifting techniques**
- 5. Exercise regularly**

## Carpal Tunnel Syndrome

<b>CAUSE</b>	Repetitious finger and hand movements that cause swelling of the tendons and put pressure on the median nerve, which is in the carpal tunnel area of the wrist.
<b>SYMPTOMS</b>	<ul style="list-style-type: none"> <li>• Pain</li> <li>• Tingling</li> <li>• Numbness</li> <li>• Weakness in hands</li> <li>• Waking at night with hand pain</li> </ul>
<b>TREATMENT</b>	<p><u>Non-surgical: moderate cases</u></p> <ul style="list-style-type: none"> <li>• Reduce repetition in work</li> <li>• Wear wrist splints at night</li> <li>• Exercise hands and wrists</li> <li>• Use over-the-counter pain medicine</li> </ul> <p><u>Surgical: severe cases</u></p> <p>Cut the ligament across the carpal tunnel in the wrist to relieve pressure on the median nerve</p>



2003

## Tendonitis

<b>CAUSE</b>	Repetitive stress on joints produces inflammation in and around tendons.
<b>SYMPTOMS</b>	<ol style="list-style-type: none"> <li>1. Mild swelling</li> <li>1. Numbness</li> <li>1. Tingling</li> <li>1. Stiffness</li> <li>1. Restricted movement of the joint</li> <li>1. Pain or tenderness at or near a joint</li> </ol>
<b>TREATMENT</b>	<ul style="list-style-type: none"> <li>• Usually heals in about two weeks using:             <ol style="list-style-type: none"> <li>1. Rest</li> <li>2. Ice</li> <li>3. Compression</li> <li>4. Elevation</li> </ol> </li> <li>• Chronic conditions can take over six weeks to heal or require surgery.</li> </ul>

2003

## Back Pain

<b>CAUSE</b>	<ul style="list-style-type: none"><li>• Poor posture, improper lifting practices</li><li>• Inadequate back support from your chair</li><li>• Poor workstation design</li><li>• Spinal compression</li></ul>
<b>SYMPTOMS</b>	<ul style="list-style-type: none"><li>• Localized pain</li><li>• Deep ache in muscles</li></ul>
<b>TREATMENT</b>	<ul style="list-style-type: none"><li>• Most back pain resolves itself.</li><li>• If your chair does not adequately support your entire back, you may need to adjust your chair or purchase a lumbar support pad or a new chair that has adjustable features.</li><li>• Shift positions and take breaks frequently.</li><li>• Take over-the-counter pain medication.</li><li>• Chronic pain may require surgery.</li></ul>

2005

## Eye Strain

<b>CAUSE</b>	<ul style="list-style-type: none"><li>• Focusing on a monitor for extended time periods without resting the eyes</li><li>• Monitor screen glare, poor lighting or poor workstation design</li></ul>
<b>SYMPTOMS</b>	<ul style="list-style-type: none"><li>• Headaches</li><li>• Focusing problems</li><li>• Double vision</li><li>• Problems with color perception</li></ul>
<b>TREATMENT</b>	<ul style="list-style-type: none"><li>• Focus your eyes on something other than the monitor every 10 minutes.</li><li>• Keep your eyes lubricated by blinking regularly.</li><li>• Take breaks from working on the computer.</li><li>• Adjust your work area lights and monitor contrast.</li><li>• Reposition monitor screen angle to eliminate glare.</li><li>• Rearrange your work area to adjust the monitor.</li><li>• Relax. Stress can worsen eye strain.</li></ul>

2004

## ***Appendix M. Short service Employee***

AEI provides experienced contract professionals to its industry clients. While these professional may have extensive experience at other facilities, they often enter a specific client's facility for the first time. When assigned to a client's facility for the first time, AEI employees will follow the client's process for short service employees. The process may include not working alone and wearing uniquely colored hard hats. The client will notify AEI when short service requirements are no longer required.

## ***Appendix N. Work Permits***

All work conducted in process areas, terminals, docks, and tank field areas may require a permit. The work permit must be obtained prior to beginning work. Typical permits required at AEI client facilities include:

- Hot Work Permitting: when using heat or spark generating equipment of sufficient intensity to cause ignition of any flammable or combustible materials. Examples include: electric tools, cutting, welding, grinding, battery operated equipment or vehicle entry to battery limits.
- General Work Permit: Where the work to be done is involves no source of ignition ("cold" work).
- Confined Space Entry Permit: For any entry into a confined space.
- Excavation Permit: Required for any breaking of the earth's surface regardless of location.
- Lifting Over Live Equipment Permit: Required for lift materials over operating equipment.
- Always follow equipment isolation, lock, tag and try procedures of the client facility.
- Before entering and after leaving a client process unit or operating area, notify the operator in charge and sign the Logbook or other designated access control document.

## ***Appendix O. Incident Investigation and Reporting***

Report all injuries illnesses and near misses: Report all injuries and illnesses, no matter how small, immediately to AEI management and your client contact. Once the immediate medical issues have been addressed, the injured employee will complete the initial injury report. The employee may request assistance from the safety coordinator in completing the report. As soon as medically possible, an injured employee will assist in defining the root cause of the injury or illness and identify actions to prevent future injuries or illnesses.

### **SCOPE**

This procedure applies to all AEI employees at all work locations. Regardless of the nature of the incident and the particular information or data required, the incident investigation must be initiated within 48 hours following the incident. At a client facility AEI will fully cooperate with the client's incident investigation. However, AEI will complete its own investigation and prepare a report. AEI will review the investigation results and recommendations with the client to resolve issues prior to issuing a final report. Recommendation(s) may be agreed upon and executed (if necessary) before completion of the investigation to minimize recurrence of the event prior to the approval of the final report.

### **CONDITIONS FOR IMPLEMENTATION**

This procedure will be used to investigate any incident where an AEI employee is injured or has significant involvement in the incident. Significant involvement means that an action by an AEI employee was or could have

been a causal factor in the incident.

For this procedure incidents are unplanned events that disrupt the organization, and include the following:

- **Injury** – Any injury to an AEI employee, client or other contractor.
- **Fatality** – Any fatality of a AEI employee, client or other contractor.
- **Fire** – Any flash or fire of any size which results from an unexpected and unintended event.
- **Loss of Material** – Any release or spill of a product, a process material or hazardous material, into the environment which may involve human error, design or misunderstanding of plant systems.
- **Mix-up of Material** – Any misrouting or contamination of feedstocks and products resulting from equipment malfunction, human error or improper labeling or identification of containers or process equipment.
- **Operational Problem** – An operations problem that has a detrimental effect on the normal operation of the facility and results in a deviation from the normal operating upper and lower limits for pressure, temperature or flow, release to the flare, release to the atmosphere or slopping of products.
- **Chemical Exposure** – Any unexpected and/or unintended exposure of personnel to any feedstock, product or hazardous material even if the exposure did not result in an allegation or injury.
- **Near Miss** – Any incident which, if it had proceeded to a reasonably possible and more serious level of development, would have the potential for personnel injuries, equipment damage or process hazard.
- **Other** – Any significant event that requires further investigation which is not covered in other classifications. Examples – vehicle accident, equipment failure, property damage, theft, vandalism, community complaint or exposure, or permit exceedances.

## GENERAL RESPONSIBILITIES

It is the responsibility of the AEI employee involved to understand and comply with the guidelines of this procedure which includes the following initial steps:

- Notification to the client contact and the AEI Safety Coordinator before leaving the facility the day of the incident unless medically unable.
- Submittal of an initial incident report to the AEI Safety Coordinator within 24 hours of the incident.
- Assist the client in mitigation of the incident if the employee is trained and certified for the required action.
- Fully cooperate with the client and AEI investigations of the incident.

The AEI Safety Coordinator should review the preliminary incident report to determine how the incident will be investigated, as soon as possible, but no later than 48 hours from the time of the incident. The Safety coordinator will inform the AEI Senior partner of the incident and the investigation as soon as the investigation plan has been set.

## INITIAL INCIDENT REPORT

Purpose: The initial incident report is designed to capture significant facts about the incident before they are lost in the immediate time following the incident. The facts are critical in determining how to investigate and evaluate the incident.

<u>Person</u>	<u>Responsibilities</u>
AEI Affected Employee	<ol style="list-style-type: none"> <li>1. Seek treatment for the injury or illness. (see Injury treatment guidelines in Employee Safety Handbook)</li> <li>2. Take immediate action, for which the employee is qualified, to prevent further harm to people, property or the environment.</li> <li>3. Report incident to the client personnel (e.g., Unit Process Operator or Supervisor, Plant Shift Superintendent, fire house, maintenance, etc.) who will provide assistance in the mitigation of the incident.</li> <li>4. Notify the client contact of the incident.</li> <li>5. Notify the AEI Safety Coordinator of the incident.</li> <li>6. Complete the preliminary incident report and send to the AEI Safety Coordinator before leaving the facility the day of the incident, unless medically unable.</li> </ol>

<u>Person</u>	<u>Responsibilities</u>
AEI Affected Employee	<ol style="list-style-type: none"> <li>1. Cooperate fully with the AEI and client investigation to identify causal factors of the incident.</li> </ol>
AEI Safety Coordinator	<ol style="list-style-type: none"> <li>1. Communicate with the employee to determine the extent of injuries or incident severity.</li> <li>2. Review the preliminary incident report and determine how AEI will investigate.</li> <li>3. Notify the client contact of AEI's plan to investigate and request or offer assistance as appropriate.</li> <li>4. Verbally notify the AEI senior partner of the incident and the investigation plan.</li> <li>5. Lead the investigation of the incident or assign a qualified leader to the investigation.</li> <li>6. Inspect the scene of the incident, and take pictures if needed. (Pictures may require a client camera permit and a hot work permit in some locations.)</li> <li>7. Interview everyone involved with the incident individually. Take meeting notes and ask the person interviewed to review the notes and confirm accuracy. A copy of the notes can be given to the interviewee.</li> <li>8. With assistance from the client, secure any physical evidence of the incident.</li> </ol>

## INVESTIGATION OF CAUSAL FACTORS

Purpose: The investigation is designed to identify all factors that could have contributed to the incident. These factors include the testimony of the employee and other witnesses. The investigation assumes all witnesses are providing truthful and accurate statements. Due to the nature of human perception some statements may be in conflict. In such cases physical evidence may be required to define the most accurate description of events.

## ANALYSIS OF FACTORS TO DETERMINE ROOT CAUSE

Purpose: The root cause analysis is designed to create a necessary and sufficient logic based model of the facts that can explain how the incident happened. Necessary means the model must include everything essential to explain the incident. For example every fire must have a source of oxygen. Sufficient means that factors that do not contribute to explaining the incident are not included in the model. The logic diagram looks backward in time and can stop at any of three places:

- A factor where there are insufficient facts to further evaluate the cause.
- A factor that cannot be changed
- A factor that if an action were changed the incident would not have happened (root cause).

<u>Person</u>	<u>Responsibilities</u>
Investigation Leader	<ol style="list-style-type: none"><li>1. Using only the facts of the incident develop a logic diagram explaining the incident</li><li>2. Review root cause with client and resolve any open issues.</li></ol>

## COMPREHENSIVE INVESTIGATION REPORT

Purpose: The investigation report should document the incident and using the logic diagram explain how it happened. Each root cause should include a recommendation on how to correct the root cause. Since the logic model is necessary and sufficient not every root cause must be addressed to prevent a future reoccurrence. However management should address as many root causes as practicable to minimize the risk of potentially similar events.

<u>Person</u>	<u>Responsibilities</u>
Investigation Leader	<ol style="list-style-type: none"> <li>1. Define the incident</li> <li>2. Prepare the comprehensive investigation report</li> <li>3. Using the logic diagram explain how it happened</li> <li>4. Define the “root causes” that if changed would have prevented the incident</li> <li>5. Provide recommendations on which root causes will be addressed to prevent a future reoccurrence</li> <li>6. Assign responsibilities and a time-line for implementing recommendations</li> <li>7.</li> </ol>
AEI Senior Partner 1	<ol style="list-style-type: none"> <li>1. Review any outstanding issues with the client</li> <li>2. Approve final report and action plans</li> </ol>

### **COMMUNICATE FINDINGS TO AFFECTED EMPLOYEES**

Purpose: The investigation of incident presents an opportunity for employees at other locations to take actions that will prevent similar events at their respective locations. Therefore, lessons learned from the incident will be translated into a learning tool that is shared throughout the company.

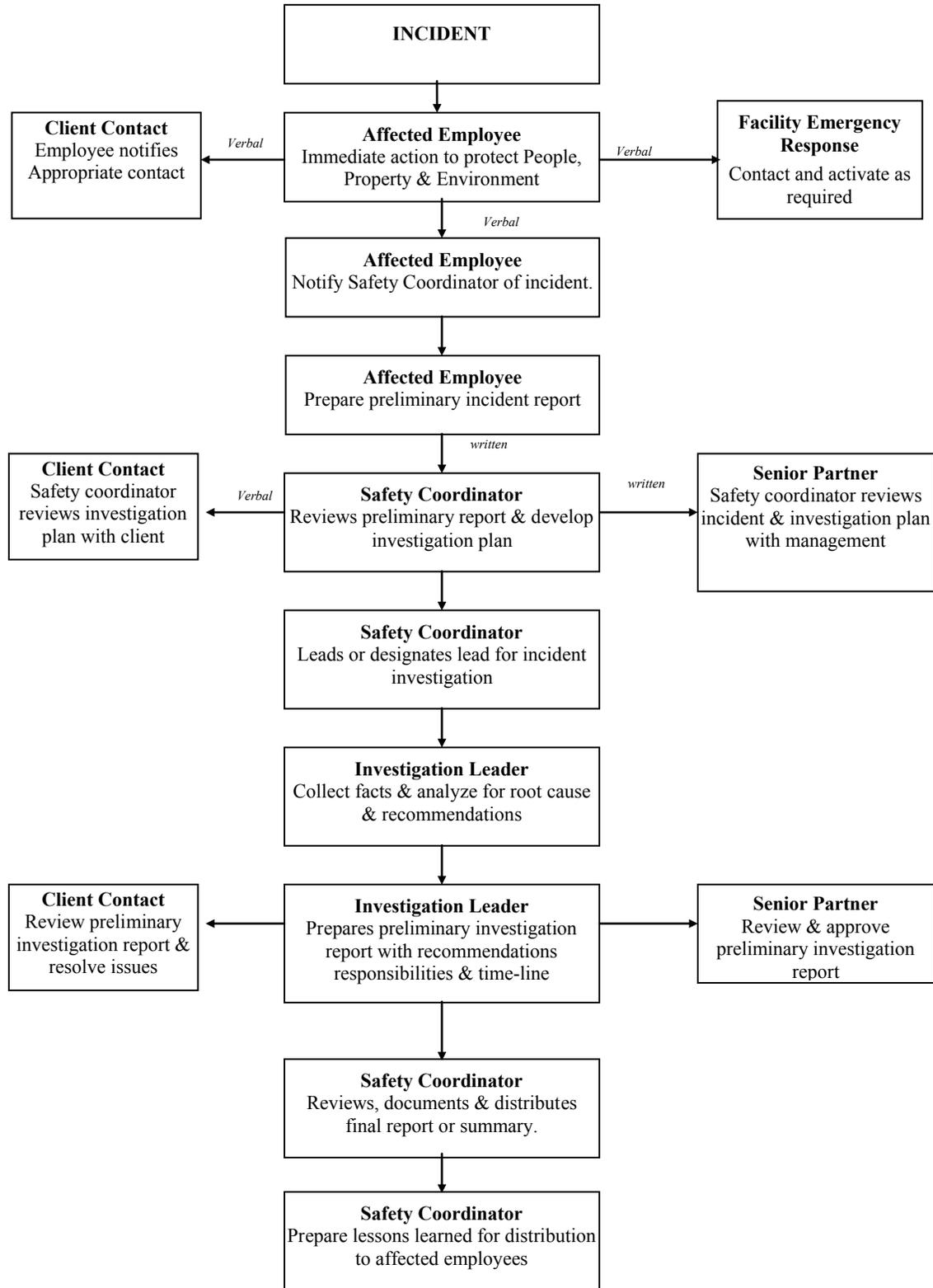
<u>Person</u>	<u>Responsibilities</u>
Safety Coordinator 1	<ol style="list-style-type: none"> <li>1. Identify all employees who could be exposed to a similar incident</li> <li>2. Prepare a communication package to inform employees of actions they can take to prevent a similar incident</li> </ol>
AEI Staff	<ol style="list-style-type: none"> <li>1. Communicate findings to all effected employees</li> </ol>

### **CLOSURE OF THE INCIDENT**

Purpose: Closure ensures that corrective actions are actually taken. It also documents that AEI takes all incident seriously and is committed to an injury free, incident free workplace.

<u>Person</u>	<u>Responsibilities</u>
Safety Coordinator 1	<ol style="list-style-type: none"> <li>1. Assign a facility specific incident number to all incidents.</li> <li>2. Maintain records of all investigations for five (5) years</li> <li>3. Track recommendations to closure</li> </ol>

## AEI NEAR MISS / INCIDENT INVESTIGATION FLOWCHART



**END OF PROCEDURE**

## Employee Initial report of Incident

<b>Name:</b>	<b>Date of Incident:</b>	<b>Facility:</b>
<b>Phone # to reach you:</b>	<b>Time of Incident:</b>	<b>Location:</b>

**Type of Incident:**

- Vehicle Accident     
  Injury     
  Illness     
  Spill     
  Chemical release  
 Permit exceedances   
  other

**Incident Description**

<b>Describe Incident:</b>
<b>Describe task being performed:</b>
<b>Name and Phone of task Supervisor:</b>
<b>Describe physical conditions such as Weather:</b>
<b>Witnesses:</b>

**Immediate Actions taken**

<b>Emergency Response:</b>	
<b>First Aid or Medical Treatment:</b>	
<b>Name &amp; Phone of injured</b>	
<b>Name &amp; Phone of doctor/hospital</b>	

**Notification**

<b>Client notified</b>
<b>AEI notified</b>

## ***Appendix P. Client Requirements***

Each client will have specific HSE requirements unique to their company and facility. These requirements are defined prior to the initial assignment, and all required training or certification will be completed prior to the initial assignment by the employee.