

# 7-STEP ACCIDENT CAUSATION ANALYSIS

## Uses of this Form

(1) To ensure that the investigation of an accident or incident is thorough; (2) to determine the immediate/direct causes of the accident (these will need to be corrected immediately); and (3) to identify the basic/underlying (root) causes of the accident, where long-term health and safety system changes will be necessary.

### STEP 1 – Describe the Accident or Incident

### STEP 2 – Evaluate the loss potential if not controlled

Circle the letter(s), which best identifies the potential loss if the hazard(s) is not eliminated or controlled.

Probability of Recurrence	Actual/Potential Severity			
	Death, permanent total disability or property damage > \$100,000	Lost-time injury or property damage \$10,000 - \$100,000	Medical aid injury only or property damage \$1,000 - \$10,000	First aid injury only or property damage < \$1,000
Frequent	A	D	G	J
Occasional	B	E	H	K
Rare	C	F	I	L

### STEP 3 – Identify The Type of Contact or Near Contact With Energy or Substance

- Struck against (running/bumping into)
- Fall to lower level
- Caught in (pinch and nip points)
- Caught between or under (crushed or amputated)
- Contact with (electricity, heat, cold, radiation, caustics, toxics, noise)
- Struck by (hit by moving object)
- Fall on same level (slip & fall, trip over)
- Caught on (snagged, hung)
- Overstress, overexertion, overload

### STEP 4 – Identify Immediate/Direct Causes

#### 4 (A) Substandard Work Practices

- (SWP-1) Operating equipment without authority
- (SWP-2) Failure to warn
- (SWP-3) Failure to secure/make safe
- (SWP-4) Operating at improper speed
- (SWP-5) Making safety devices inoperative
- (SWP-6) Removing safety devices
- (SWP-7) Using defective/improper equipment
- (SWP-8) Using equipment improperly
- (SWP-9) Failure to use PPE properly
- (SWP-10) Improper loading
- (SWP-11) Improper placement
- (SWP-12) Improper lifting
- (SWP-13) Improper position for task
- (SWP-14) Servicing equipment in operation
- (SWP-15) Horseplay
- (SWP-16) Influence of alcohol/drugs suspected
- (SWP-17) Inattention/negligence
- (SWP-18) Failure to follow a specific work procedure

#### 4 (B) Substandard Work Conditions

- (SWC-1) Inadequate guards or barriers
- (SWC-2) Inadequate/improper protective equipment
- (SWC-3) Defective tools, equipment or materials
- (SWC-4) Congestion or restricted action
- (SWC-5) Inadequate warning system
- (SWC-6) Fire and explosion hazards
- (SWC-7) Poor housekeeping/disorder
- (SWC-8) Hazardous environmental conditions: gases, dusts, smoke, fumes, vapours
- (SWC-9) Noise exposure
- (SWC-10) Radiation exposure
- (SWC-11) Temperature extremes
- (SWC-12) Inadequate or excessive illumination
- (SWC-13) Inadequate ventilation

### STEP 5 – Identify Basic/Underlying (root) Causes

For ease of use, we have categorized the Basic/Underlying (root) causes. In each category (such as PF-1, PF-2,...), there are a number of specific topics listed. Not all of the topics or categories apply to every accident. Check off the categories that you feel have contributed the most to causing this accident. Remember: all could apply, but in most cases, probably 3 or 4 will stand out as being the biggest contributors to the accident.

#### 5 (A) Personal Factors

- (PF-1) Inadequate Physical/Physiological Capability
  - Inappropriate height, weight, size, strength, reach, etc.
  - Restricted range of body movement
  - Limited ability to sustain body positions
  - Substance sensitivities or allergies
  - Sensitivities to sensory extremes (temperature, sound, etc.)
  - Vision deficiency
  - Hearing deficiency
  - Other sensory deficiency (touch, taste, smell, balance)
  - Respiratory incapacity
  - Other permanent physical disabilities
  - Temporary disabilities
- (PF-2) Inadequate Mental/Psychological Capability
  - Fears and phobias
  - Emotional disturbance
  - Mental illness
  - Intelligence level
  - Inability to comprehend
  - Poor judgment
  - Poor coordination
  - Slow reaction time
  - Low mechanical aptitude
  - Low learning aptitude
  - Memory failure
- (PF-3) Physical or Physiological Stress
  - Injury or illness
  - Fatigue due to task load or duration
  - Fatigue due to lack of rest
  - Fatigue due to sensory overload
  - Exposure to health hazards
  - Exposure to temperature extremes
  - Oxygen deficiency
  - Atmospheric pressure variation
  - Constrained movement
  - Blood sugar deficiency
  - Drugs
- (PF-4) Mental or Psychological Stress
  - Emotional overload
  - Fatigue due to mental task or speed
  - Extreme judgment/decision demands
  - Routine, monotony, demand for uneventful vigilance
  - Extreme concentration/perception demands
  - Meaningless or degrading activities
  - Confusing directions/demands
  - Conflicting demands/directions
  - Preoccupation with problems
  - Frustration
  - Mental illness
- (PF-5) Lack of Knowledge
  - Lack of experience
  - Inadequate orientation
  - Inadequate initial training
  - Inadequate update training
  - Misunderstood directions
- (PF-6) Lack of Skill
  - Inadequate initial instruction
  - Inadequate practice
  - Infrequent performance
  - Lack of coaching
  - Inadequate review instruction
  - Inadequate specifications to vendors

#### 5 (B) Job Factors

- (JF-1) Improper Motivation
  - Improper performance is rewarding
  - Proper performance is punishing
  - Lack of incentives
  - Excessive frustration
  - Inappropriate aggression
  - Improper attempt to save time or effort
  - Improper attempt to avoid discomfort
  - Improper attempt to gain attention
  - Inadequate discipline
  - Inappropriate peer pressure
  - Improper supervisory example
  - Inadequate performance feedback
  - Inadequate reinforcement of proper behaviour
  - Improper production incentives
- (JF-2) Inadequate Leadership and/or Supervision
  - Unclear/conflicting reporting relationships
  - Unclear or conflicting assignment of responsibilities
  - Improper or insufficient delegation
  - Giving inadequate policy, procedure, practices or guidelines
  - Giving objectives, goals or standards that conflict
  - Inadequate work planning or programming
- (JF-3) Inadequate Engineering
  - Inadequate assessment of loss exposures
  - Inadequate consideration of human factors/ergonomics
  - Inadequate standards, specifications and/or design criteria
  - Inadequate monitoring of construction
  - Inadequate assessment of operational readiness
  - Inadequate or improper controls
  - Inadequate monitoring of initial operation
- (JF-4) Inadequate Purchasing
  - Inadequate specifications on requisitions
  - Inadequate research on materials/equipment
  - Inadequate mode or route of shipment
  - Inadequate receiving inspection and acceptance
  - Inadequate communication of safety and health data
  - Improper handling of materials
  - Improper storage of materials
  - Improper transporting of materials
  - Inadequate identification of hazardous items
  - Improper salvage and/or waste disposal
  - Inadequate contractor selection
- (JF-5) Inadequate Maintenance
  - Inadequate preventive
    - assessment of needs
    - lubrication and servicing
    - adjustment/assembly
    - cleaning or resurfacing
  - Inadequate reparative
    - communications of needs
    - scheduling of work
    - examination of units
    - part substitution
- (JF-6) Inadequate Tools and Equipment
  - Inadequate assessment of needs/risks
  - Inadequate human factors/ergonomics considerations
  - Inadequate standards or considerations
  - Inadequate availability
  - Inadequate adjustment/repair maintenance
  - Inadequate salvage and reclamation
  - Inadequate removal and replacement of unsuitable items
- (JF-7) Inadequate Work Standards
  - Inadequate inventory and evaluation of standards for:
    - inventory and evaluation of exposures and needs
    - coordination with process design
    - employee involvement
    - procedures/practices/rules
  - Inadequate communication of standards for:
    - publication
    - distribution
    - translation to appropriate languages
    - training
    - reinforcing with signs, colour codes and job aids
- (JF-8) Excessive Wear and Tear
  - Inadequate maintenance of standards for:
    - tracking of work flow
    - updating
    - monitoring of procedures/practices/rules
  - Inadequate monitoring of compliance
- (JF-9) Abuse or Misuse
  - Improper conduct that is condoned
    - intentional
    - unintentional
  - Improper conduct that is not condoned
    - intentional
    - unintentional

### STEP 6 – Recommended Actions to Correct Immediate/Direct Causes

Causes (Immediate / Direct)	Actions	Time Frames	Who is Responsible

### STEP 7 – Recommended Actions to Correct Basic/Underlying (root) Causes

Use the framework outlined below.

- Health and Safety Responsibility**
  - 1. Health and safety policy
  - 2. Health and safety plan
  - 3. General health and safety rules
  - 4. Health and safety procedures/practices
  - 5. Legal obligations
  - 6. Health and safety actions
- Management Commitment**
  - 7. Health and safety communication
  - 8. Management support
  - 9. Well-being of employees
- Employee Involvement**
  - 10. Health and safety orientation
  - 11. Employee participation
  - 12. Required safe work practices
- Hazard and Risk Management**
  - 13. Identification of hazards and risks
  - 14. Control of hazards and risks
  - 15. Hazard and risk reporting
  - 16. Accident reporting
  - 17. Accident investigation
  - 18. Accident and injury analysis
  - 19. Health and safety inspections
- Health and Safety Education**
  - 20. Health and safety educational needs
  - 21. Health and safety education delivery
  - 22. Health and safety education effectiveness

Causes (Basic / Underlying)	Actions	Time Frames	Who is Responsible

Note: Recommended actions should become part of your organization's overall H&S workplan.