

## Appendix M – Generic Hazard Checklist

### GENERIC HAZARD CHECKLIST

1. **BASIC DESIGN DEFICIENCIES**
  - A. Examples:
    1. Sharp corners
    2. Instability
    3. Excessive weight
    4. Inadequate clearance
    5. Lack of accessibility
  - B. Causes: Improper or Poor Design
  - C. Control Methods: Improve or Change Design
  
2. **INHERENT HAZARDS**
  - A. Examples:
    1. Mechanical (i.e., rotating equipment, vibration)
    2. Electrical
    3. Explosives
    4. Flammable gases or liquids
    5. Toxic substances
    6. Acceleration (flying objects)
    7. Deceleration (falling objects)
    8. Temperature
  - B. Cause: Integral Characteristic Which Cannot Be Designed Out
  - C. Control Methods:
    1. Safety devices
      - (a) Isolation (separation)
      - (b) Barriers (guards)
      - (c) Interlocks (deactivation)
      - (d) Pressure release
      - (e) Temperature sensor (fuse)
    2. Warning devices (five senses)
      - (a) Visual (sight) - color, shape, signs, light
      - (b) Auditory (hearing) - bell
      - (c) Tactile (touch) - shape, texture
      - (d) Olfactory (smell)
      - (e) Gustatory (taste)
    3. Procedures and training
      - (a) Use of safe procedures
      - (b) Training
      - (c) Backout/recovery procedures
      - (d) Protective equipment
      - (e) Emergency procedures
  
3. **MALFUNCTIONS**
  - A. Examples:
    1. Structural failures
    2. Mechanical malfunctions
    3. Power failures
    4. Electrical malfunctions
  - B. Causes:
    1. Faulty design
    2. Manufacturing defects
    3. Improper or insufficient maintenance
    4. Exceeding specified limits
    5. Environmental effects
  - C. Control Methods: Design
    1. Fail safe design
    2. Higher safety margins (i.e., reduce stress, increase load strength, etc.)
    3. Redundant circuitry or equipment

- 4. Timed replacement
- D. Other Control Methods: Safety Devices, Warning Devices, Procedures and Training (See Point 2C 1-3)

#### 4. MAINTENANCE HAZARDS

- A. Examples:
  - 1. Improper connections
  - 2. Component failures
  - 3. Equipment damage
  - 4. Operational delay
- B. Causes:
  - 1. Lack of maintenance
  - 2. Improper maintenance
  - 3. Hazardous maintenance conditions
- C. Control Methods:
  - 1. Design
    - (a) Simplified design
    - (b) Fail-safe design.
    - (c) Easy access to equipment
    - (d) Elimination of need for special tools or equipment
  - 2. Safety devices
    - (a) Guards for moving parts
    - (b) Interlocks
  - 3. Warning devices
    - (a) Labels/signs
    - (b) Bells
    - (c) Chimes
    - (d) Lights
  - 4. Procedures or training
    - (a) Documentation of proper procedures
    - (b) Improved training courses
    - (c) Housekeeping

#### 5. ENVIRONMENTAL HAZARDS

- A. Examples:
  - 1. Heat
  - 2. Cold
  - 3. Dryness
  - 4. Wetness
  - 5. Low friction (slipperiness)
  - 6. Glare
  - 7. Darkness
  - 8. Earthquake
  - 9. Gas or other toxic fumes
- B. Causes:
  - 1. Inherent
  - 2. Foreseen or unforeseen natural phenomena/conditions which do or could occur
- C. Control Methods [see also 4(c)]
  - 1. Design
    - (a) Increased resistance to temperature changes
    - (b) Increased resistance to dryness or wetness
    - (c) Fail-safe design
  - 2. Safety Devices
    - (a) Sufficient heating or cooling capability
    - (b) Adequate insulation
    - (c) Restricted access
    - (d) Temperature sensor
  - 3. Warning devices
    - (a) Visual
    - (b) Auditory

- (c) Olfactory
- 4. Procedures and training
  - (a) Use of safe procedures
  - (b) Protective equipment
  - (c) Training
- 6. **HUMAN FACTORS**
  - A. Examples: (include review of all other items listed in 1-5)
    - 1. Stress (sensory, mental, motor)
    - 2. Physical surroundings (environment)
      - (a) Noise
      - (b) Illumination
      - (c) Temperature
      - (d) Energy sources
      - (e) Air and humidity
      - (f) Vibration
    - 3. Errors
      - (a) Omission
      - (b) Commission
    - 4. Not recognizing hazards
    - 5. Incorrect decisions
    - 6. Tasks done at wrong time
    - 7. Tasks not performed or incorrectly performed
  - B. Causes:
    - 1. Inadequate attention to human design criteria
    - 2. Poor location, layout of controls
    - 3. Equipment complexity
    - 4. Inherent hazards
    - 5. Incorrect installation
    - 6. Failure of warning devices
    - 7. Inadequacy of procedural safeguards
      - (a) Failure to follow instructions
      - (b) Lack of knowledge of procedures
    - 8. Inadequate training
    - 9. Improper or insufficient maintenance
  - C. Control Methods:
    - 1. Design (to address items 1 - 6)
    - 2. Safety devices (redundancy)
      - (a) Isolation (separation)
      - (b) Barriers (guards)
      - (c) Interlocks (deactivation)
      - (d) Temperature sensor (fuse)
    - 3. Warning devices - five senses (redundancy)
      - (a) Visual (sight) - color, shape, signs, light
      - (b) Auditory (hearing) – bell
      - (c) Tactile (touch) - shape, texture
      - (d) Gustatory (taste)
      - (e) Olfactory (smell)
    - 4. Procedures and training
      - (a) Clear warning labels (nature of hazard, action to avoid injury, consequences)
      - (b) Use of complete, proper, safe procedures
      - (c) Adequate training (also refresher training)
      - (d) Backout/recovery procedures
      - (e) Protective equipment
      - (f) Emergency procedures
      - (g) Proper maintenance procedures