

**ATTACHMENT B: TO BE USED IN ANSWERING QUESTION 1****Energy Trace and Barrier Analysis****Energy Source Checklist**

- (1) Electrical
  - AC or DC current flows
  - Stored electrical energy / discharges
  - Electromagnetic emissions
  - RF pulses
  - Induced voltages / currents
  - Control voltages / currents
- (2) Mass / gravity / height
  - Trips and falls
  - Falling / dropped objects
  - Suspended objects
- (3) Rotational kinetic
  - Rotating machinery / gears / wheels / shafts
  - Moving fan / propeller blades
  - Winch and hoist drums
  - Fracturing of rotating equipment
- (4) Linear kinetic
  - Projectiles, missiles
  - Moving vehicles
  - Aircraft in flight
  - Rams, shears, presses
  - Conveyors, belts, moving parts
  - Springs, stressed members
- (5) Pressure / volume / kinetic displacement
  - Overpressure ruptures / explosions
  - Vacuum growth
  - Liquid spill / flood / buoyancy
  - Expanding fluids / fluid jets / vaporisation
  - Movement / uncoiling of pressurised hoses
  - Air movement
  - Trenching / digging / earth movement
- (6) Noise / vibration
  - Noise
  - Vibration
  - Transonic shock
- (7) Moisture / humidity
- (8) Chemical (acute and chronic sources)
  - Fire
  - Explosion
  - Non-explosive reaction
  - Material degradation
  - Toxic or asphyxiant gas production
  - Corrosion
  - Material swelling
  - Disassociation
  - Combination
- Displacement
- Presence of fuels, explosives, strong oxidising agents
- Presence of ignition source
- Ordnance
- Carcinogens
- Toxic materials
- (9) Thermal
  - Radiant / burning / molten materials
  - Conductive
  - Convective
  - Thermal cycling
  - Low temperatures / cryogenics
- (10) Etiologic agents
  - Viral
  - Bacterial
  - Fungal
  - Parasitic
  - Biological toxins
- (11) Radiation
  - Ionising
  - Non-ionising
  - Laser
- (12) Magnetic fields
- (13) Living creatures etc
  - Actions of people
  - Actions of animals
  - Actions of plants / trees / shrubs
- (13) Environmental / terrestrial
  - Earthquake
  - Floods
  - Landslide
  - Avalanche
  - Subsidence
  - Compaction
  - Cave-ins
  - Underground water flows
  - Glacial
  - Volcanic
- (14) Environmental / atmospheric
  - Wind
  - Rain / snow / hail / sleet
  - Lightning
  - Particulates / dusts / powders / aerosols
  - Sunshine / solar
  - Air movements

**Energy changes**

1. Flow / transfer unintended / too much / too little / none at all
2. Flow / transfer too soon / too late
3. Flow / transfer too fast / too slow
4. Flow / transfer blocked / built up / release
5. Wrong form / wrong type input or flow
6. Cascading effects of energy release

**Barrier changes**

1. Barrier too strong / weak
2. Barrier ineffective / incorrectly designed
3. Barrier too soon / too late
4. Barrier degraded / failed completely
5. Barrier impeded / enhanced energy transfer / flow
6. Wrong barrier type selected