



MITIGATION

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WHAT IS MITIGATION?

- Mitigation is the effort to reduce loss of life and property by lessening the impact of disasters.
- It is permanent reduction of the risk of disaster.
- It reduces the severity of disaster by implementing sustained actions.
- It includes recognizing that disasters will occur.



- Lessening the force or intensity of something unpleasant, as pain, wrath, grief or extreme circumstances is also known as mitigation.
- Effective mitigation requires that we all understand local risks, address the hard choices, and invest in long-term community well-being. without mitigation actions, we jeopardize our safety, financial security and self-reliance.
- The number of disasters each year is increasing but only 50% of events trigger federal assistance.



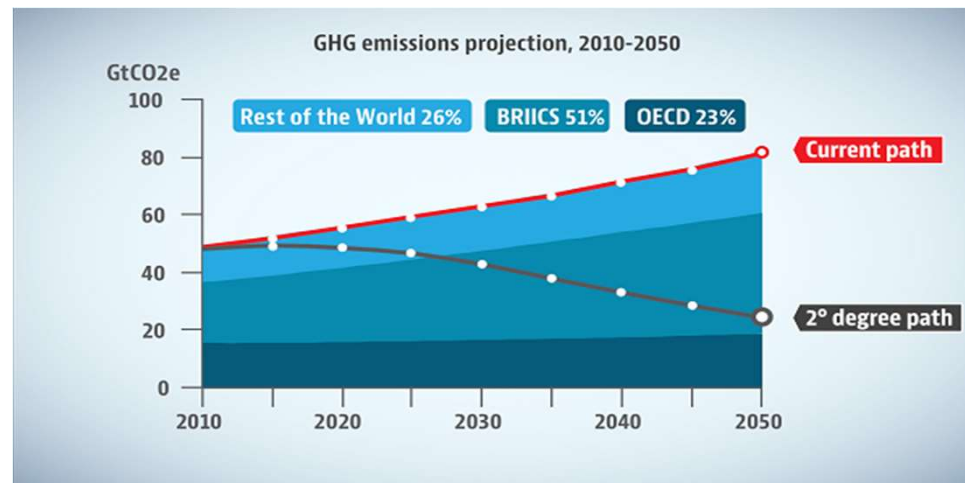
TYPES OF MITIGATION

- Climate change mitigation.
- Environmental mitigation.
 - Mitigation banking.
- Disaster mitigation.
 - Flood mitigation.
 - Landslide mitigation.
 - Hurricane mitigation.
- Radon mitigation.



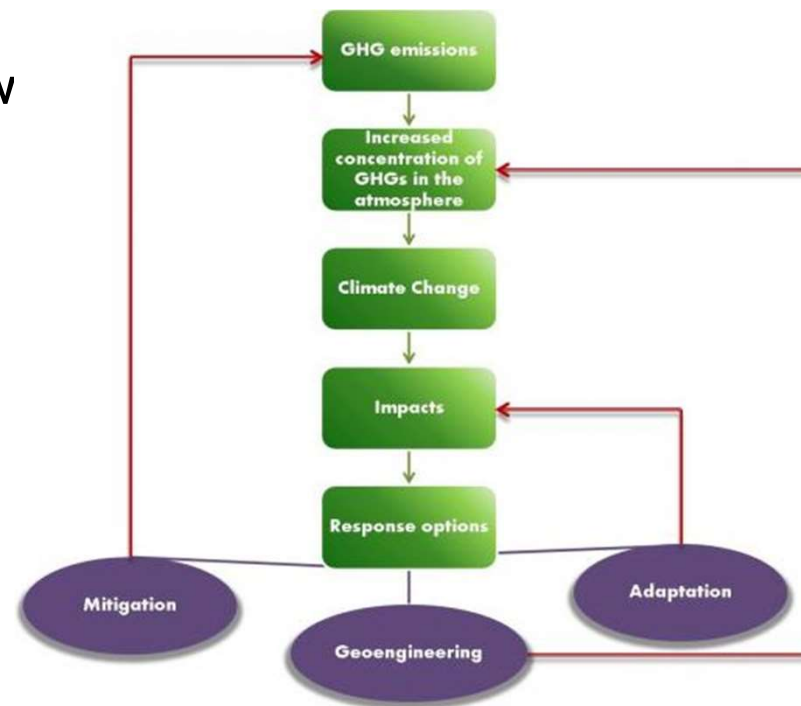
CLIMATE CHANGE MITIGATION

- **Climate change mitigation** consists of actions to limit the magnitude or rate of long-term global warming and its related effects
- It involves reductions in human emissions of green house gases.



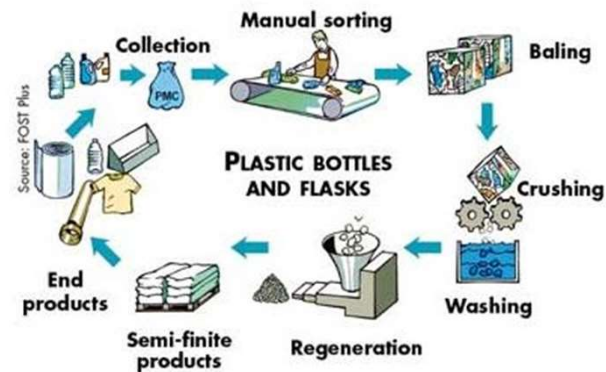
CLIMATE CHANGE MITIGATION

- Mitigation is achieved by increasing reforestation, by increasing energy efficiency, by aligning our policies for a low carbon economy , by investing less in fossil fuels and more in clean energy and by removing carbon dioxide from Earth's atmosphere.



ENVIRONMENTAL MITIGATION

- **Environmental mitigation** or *mitigation banking* is part of environmental crediting system established by governing bodies which involves allocating debits and credits.
- Debits occur in situations where a natural resource has been destroyed or severely impaired and credits are given in situations where a natural resource has been deemed to be improved or preserved.



DISASTER MITIGATION

- **Disaster mitigation** measures are those that eliminate or reduce the impacts and risks of hazards through proactive measures taken before an emergency or **disaster** occurs.
- Some of disaster mitigation measures taken before the disaster occurs:-
 - Hazard mapping
 - Adoption and enforcement of land use and zoning practices
 - Implementing and enforcing building codes
 - Flood plain mapping
 - Reinforced tornado safe rooms
 - Burying of electrical cables to prevent ice build-up
 - Raising of homes in flood-prone areas
 - Disaster mitigation public awareness programs
 - Insurance programs.



DISASTER MITIGATION

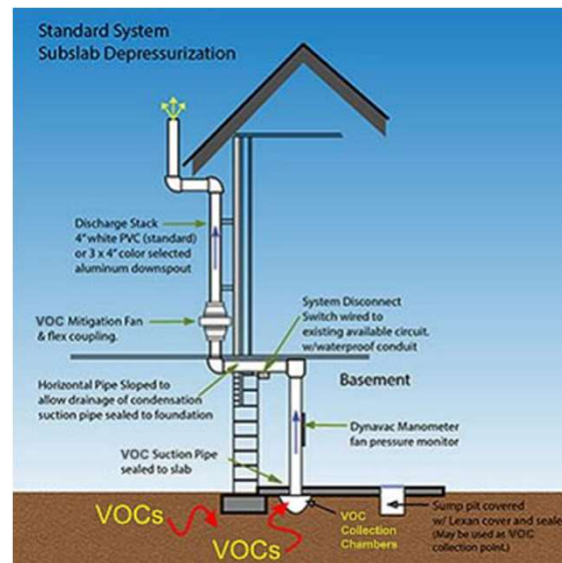
- Disaster mitigation measures may be structural (e.g. flood dikes) or non-structural (e.g. land use zoning).



RADON MITIGATION

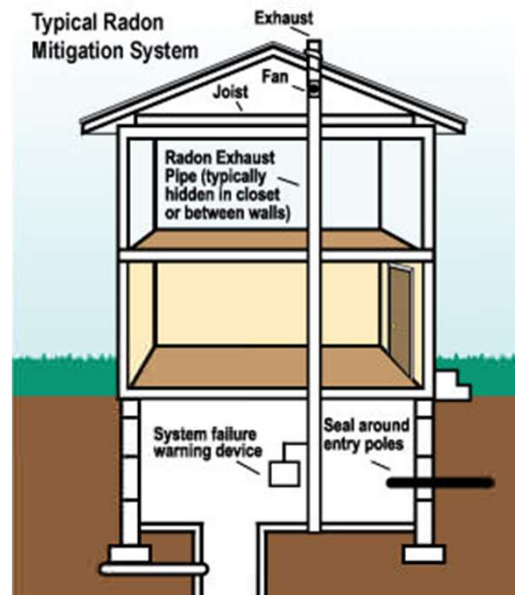
- **Radon mitigation** is any process used to reduce radon gas concentrations in the breathing zones of occupied buildings, or radon from water supplies.
- Treatment systems using aeration or activated charcoal are available to remove radon from domestic water supplies.

radon removal from domestic water

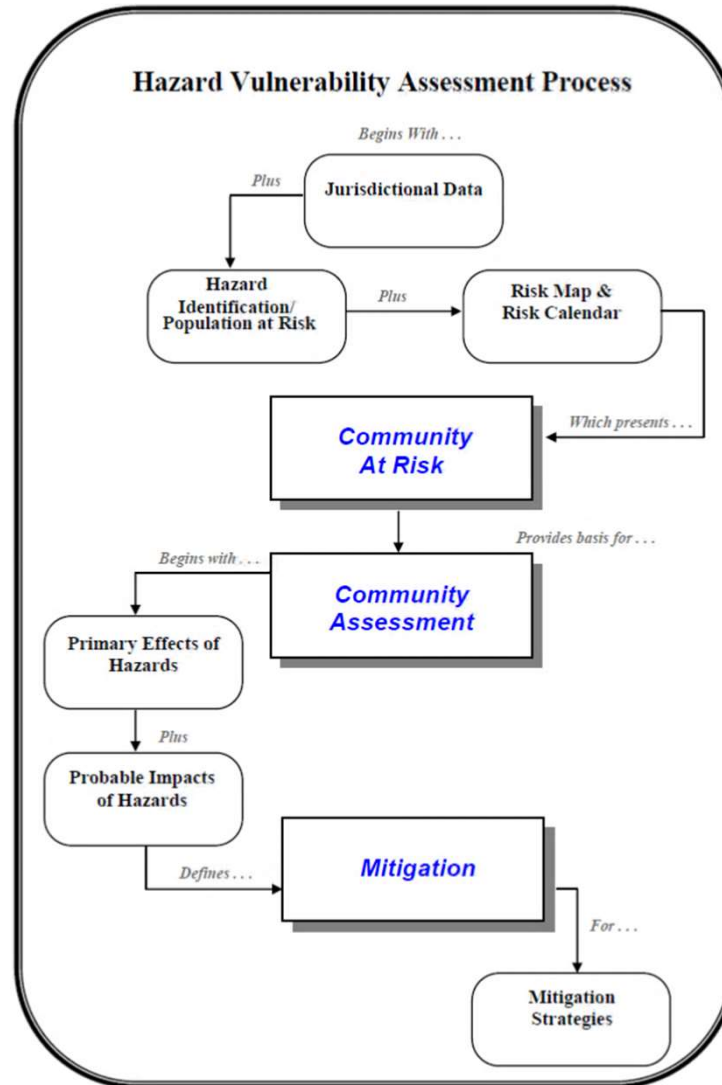


RADON MITIGATION

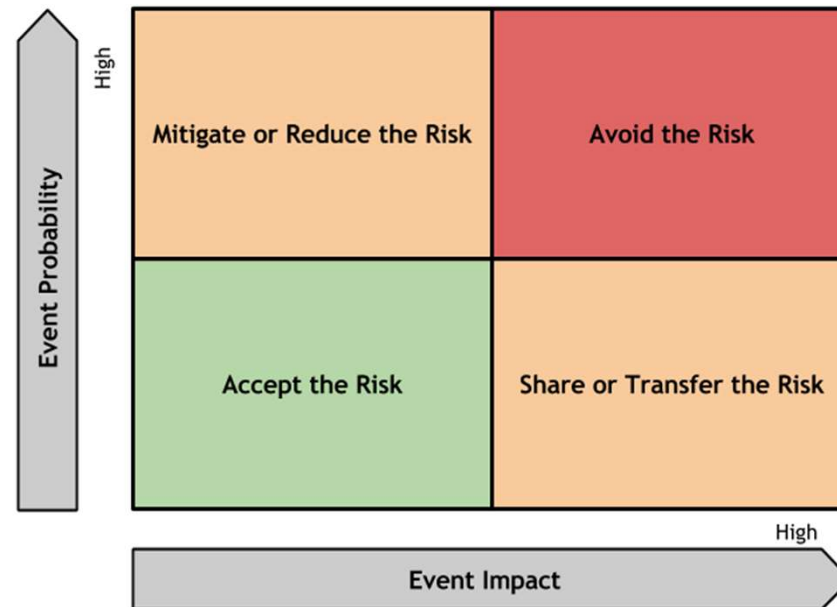
- Mitigation of radon in the air is accomplished through ventilation, either collected below a concrete floor slab or a membrane on the ground, or by increasing the air changes per hour in the building.



FLOW DIAGRAM



RISK MATRIX

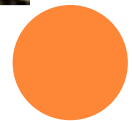


PHASES OF EMERGENCY MANAGEMENT



NATURALS SYSTEM PROTECTION

- These are actions that minimize damage and losses and also preserve or restore the functions of natural systems. Examples include:
- Forest management
- Conservation easements
- Sediment and erosion control



EDUCATION PROGRAMS

- These are actions to inform educate citizens, elected officials and property owners about hazards and potential ways to mitigate them.
- Examples for educational mitigation are:
- Radio or television spots
- Websites with maps and information
- Mailings to residents in hazard-prone areas.



PREVENTION OF MITIGATION

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|---|---|
| ISOLATION <ul style="list-style-type: none"> physical separation (distance) physical barriers keep-out or exclusion zones (buffers) interrupted operations (aircraft, bridge traffic) | RECOVERY OPERATIONS <ul style="list-style-type: none"> plans in place & current equipment & people in place & ready drills evacuation plans |
| VOID SPACES WITH INERT GAS | MAINTAIN MOBILITY (tanker + towing) |
| INERTING OF VOID SPACES | LIMIT SPILL AMOUNTS & RATES |
| VARIED TIMES OF OPERATIONS | SECURITY EMERGENCY RESPONSE FORCES |
| INTELLIGENCE <ul style="list-style-type: none"> communication links in place & ready timely updates interagency communication links | FIRE-FIGHTING CAPABILITIES <ul style="list-style-type: none"> leak detectors deluge systems radiant barriers (high-pressure high-density foam systems) backup fire fighting capabilities |
| INCREASED MOBILITY (tugs) | REDUNDANT MOORING & OFFLOADING CAPABILITIES |
| ARMED SECURITY ESCORT (boat, aircraft or on-board) | OFFSHORE MOORING & OFFLOADING CAPABILITIES |
| SWEEPS (divers, sonar, U.S.CG boarding) | SPEED LIMITS |
| SURVEILLANCE (on-ship, on-land, underwater & aerial) | CRYOGENICALLY-HARDENED VESSEL |
| EMPLOYEE BACKGROUND CHECKS | SHIP ARMOR, ENERGY-ABSORBING BLANKETS |
| TANKER ACCESS CONTROL PROGRAM | MISSILE DEFENSE SYSTEM |
| STORM PREDICTION & AVOIDANCE PLANS | REDUNDANT CONTROL SYSTEMS |
| SAFETY INTERLOCKS | BACKUP FUEL SOURCE (oil) |



PREVENTION OF MITIGATION

Prevention and mitigation measures are the things we do to prevent an emergency from happening and, if it does, to reduce or eliminate the impact.

Mitigation Measures Everyone Can Take:

- Strengthen building structures and roofs
- Install fire-resistant shingles
- Install hail-resistant shingles
- Install hurricane shutters
- Test well water
- Install backup power sources



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THANK YOU