SNS COLLEGE OF TECHNOLOGY

(An Autonomous Institution)

COIMBATORE-35

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DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

COURSE NAME: 16GE301 Professional Ethics

III YEAR / V SEMESTER

Unit 3– Engineering Responsibility for Safety

Topic 1: Risk Benefit Analysis

What We'll Discuss

TOPIC OUTLINE

Risk Benefit Analysis

Examples

Safe Exits

Risk Benefit Analysis

- Risk-benefit analysis involving studies, testing about the comparison of the risk of a situation to its related benefits.
- Risk Benefit analysis (RBA) is an approach to risk assessment that focuses not just on the risks of the activity, but on the benefits of the activity.
- Risk–benefit analysis is analysis that seeks to quantify the risk and benefits and hence their ratio. Exposure to personal risk is recognized as a normal aspect of everyday life. A certain level of risk in our lives is accepted as necessary to achieve certain benefits.

Risk Benefit Analysis

- Risk is an essential element in the development of children's physical, emotional and intellectual development.
- Risk isn't just about physical actions – for example climbing a tree or skateboarding. It's also about taking intellectual risks – trying anything for the first time, testing new ideas, accepting other people's opinions (even if you don't agree with them).
- Ex:For example, driving an automobile is a risk most people take daily.

Example-Pond dipping

- Pond dipping is a fun and simple way for children to explore an aquatic habitat.
- Children will be able to observe a diversity of different creatures from leeches to dragonfly nymphs.

RISK BENEFIT ASSESSMENT-Example

ACTIVITY	How will young people BENEFIT from this activity?	Possible hazards	Who is at risk?	PRECAUTIONS in place to reduce the risk of injury	Overall risk RATING: L/M/H
POND DIPPING: Slippery pond decking	The decking allows close access to the contents of the pond and is an essential component of exploring this habitat.	Slips, trips and falls. Cuts, grazes and abrasions. Drowning (die through submersion in and inhalation of water).	Young people; adults	• Banks shallow and planted to prevent accidental entry. • No access to banks for young people; use decking or 'beach' area only. • Deepest area is centre of pond– keep to edges. • Dipping platform kept clear of trip hazards (e.g. nets, trays) • Pond use rules clearly displayed and reviewed at the start of each session.	Low

Example-Nuclear Reactor Risk Assessment

ACTIVITY	How will people BENEFIT from this?	Possible hazards	Who is at risk?	PRECAUTIONS in place to reduce the risk of injury	Overall risk RATING: L/M/H
Nuclear Power Plant	Produces electricity.	•Radioactive Waste Disposal •Environmental Impact. •Nuclear Accidents •High cost •Can explode anytime.	•People •Environment •Nature	• Use with proper training	High

Two approaches to acceptable risk

- Layperson: wants to protect himself or herself from risk.
- The government regulator: wants as much assurance as possible that the public is not being exposed to unexpected harm.

Example (Flooding)-Before Flooding

Be prepared to evacuate:

- Discuss flood management plan
- Decide where you will meet if separated
- Identify alternate travel routes that are not prone to flooding
- Plan what to do with your precious belongings
- Fill your cars fuel tank
- Seal vents to basements to prevent flooding
- If told to leave, do so quickly

Example(Flooding)-During Flooding

- Caution to be taken in events such as sudden drop – offs, fallen trees or fallen power lines
- Do not drive through flood water
- Food water is dangerous, there may be hidden hazards
- Do not turn on electricity and gas supplies unit a qualified electrician / engineer has checked them

SAFE EXITS

- It is almost impossible to build a completely safe product or one that will never fail.
- The best one can do is to assure that when a product fails,
    1. it will fail safely,
    2. the product can be abandoned safely,
    3. the user can safely escape the product.
- These three conditions are referred as safe exit.

SAFE EXITS

- Ships need lifeboats with enough spaces for all passengers and crew members.
- Buildings need usable fire escapes.
- The operation of nuclear power plants calls for realistic ways to evacuate nearby communities.
- Avoiding system failure might require redundant or alternative means of continuing a process when the original process fails.
    1. backup systems for computer-based data banks
    2. air traffic control systems
    3. automated medical treatment systems
    4. sources of water for fire fighting.

RECALL TIME

ASSESSMENT TIME

THANK YOU