

Identify hazards and hazardous events and assess the risks



Module 3 Identify hazards and assess risks

Session structure

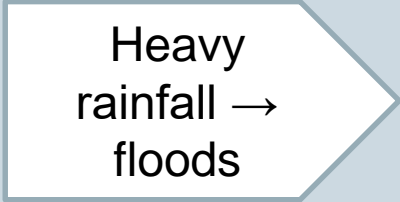
- Overview
- Example definition
- Actions
- Example output
- Challenges
- Exercises

Module 3 Identify hazards and assess risks

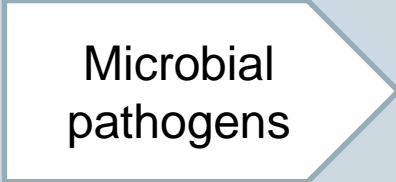


Overview

- Define hazards and hazardous events
- **Identify all hazardous events that could contaminate, compromise or interrupt supply**
- **Identify all potential hazards in supply chain**
- **Evaluate the risks associated with each hazard/
hazardous event**



Heavy
rainfall →
floods



Microbial
pathogens



Identify hazards and assess risks

Example definition:

Heavy rainfall (hazardous event) may promote the introduction of microbial pathogens (hazards) into the source water



Rain

Event



Hazard



Source water



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Examples of hazardous events

	Possible hazardous events
Catchment	<ul style="list-style-type: none">- Polluted runoff from wildlife during normal and high-rainfall events- Inadequate or no sanitation
Treatment	<ul style="list-style-type: none">- Inadequate chemical dosing- Clogged filter
Distribution	<ul style="list-style-type: none">- Vandalism- Mains burst- Drop in pressure contaminating supply via leaking pipe
User	<ul style="list-style-type: none">- Backflow- Unauthorized connections

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Actions

- Describe what could go wrong and where
- Assess risk
- Rank actions

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Actions

Describe what could go wrong and where

- Site visits / inspection
- Analysis of flow diagram
- Desk studies – historical data (e.g. flood events), predictive information

Assess risk

Rank action

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Actions

Describe what could go wrong and where

Assess risk

- Qualitative approach
- Semiquantitative approach (likelihood and consequence matrix)

Rank actions

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Example qualitative approach

Describe what could go wrong and where

Assess risk

Rank risks

Significant	Clearly a priority
Uncertain	Unsure if a significant risk
Insignificant	Clearly not a priority



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Example semiquantitative approach

Describe what could go wrong and where

Assess risk

Rank risks

		Severity or Consequence				
		Insignificant or no impact - Rating: 1	Minor compliance impact - Rating: 2	Moderate aesthetic impact - Rating: 3	Major regulatory impact - Rating: 4	Catastrophic public health impact - Rating: 5
Likelihood or frequency	Almost certain / Once a day - Rating: 5	5	10	15	20	25
	Likely / Once a week - Rating: 4	4	8	12	16	20
	Moderate / Once a month - Rating: 3	3	6	9	12	15
	Unlikely / Once a year - Rating: 2	2	4	6	8	10
	Rare / Once every 5 years - Rating: 1	1	2	3	4	5
Risk score		<6	6-9	10-15	>15	
Risk rating		Low	Medium	High	Very high	

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Example output

Describe *what could*

Algal bloom

Assess risks

Unlikely (or

Major impact

Score = 8

Rank risks

Medium risk



Picture source: <http://water.unsw.edu.au/site/res>





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Challenges



Not being aware of / missing hazardous events or hazards



Must be continually reviewed



Risk assessment uncertainty or inconsistency



Defining likelihood and consequences



Too many or too few data

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Exercises

In small groups

Assign a risk score for the following two hazardous events (see workbook)

1. Failure of chlorine dosing pump resulting in microbial pathogens not being removed
2. Water main breaks and ingress of pathogens, soil into water mains during repair
3. *Facilitator to insert locally relevant example*

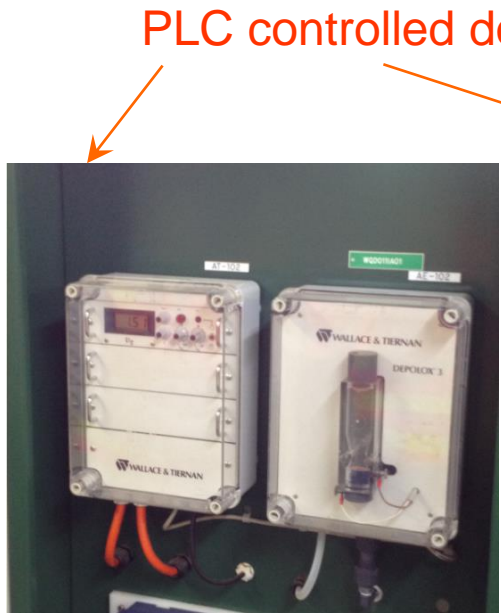
25 minutes

Manually controlled chlorine dosing system

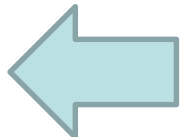
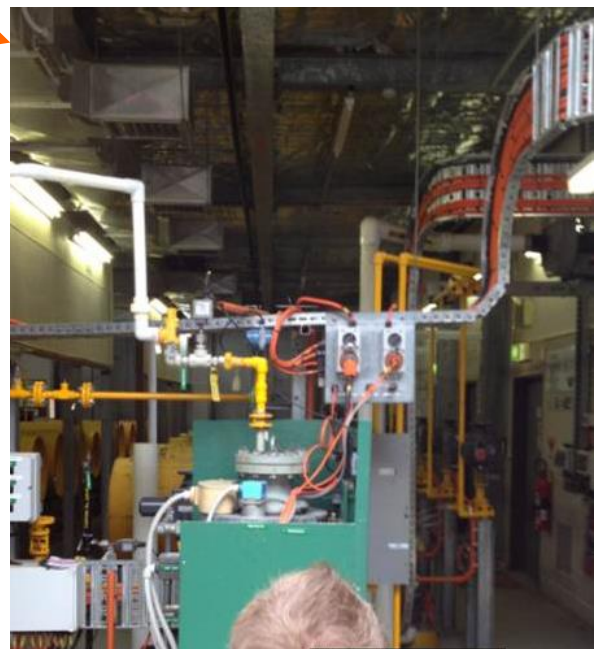


Dosing pump and injection line

Automated chlorine injection system



PLC controlled dosing system



Main break repair process

