

HAZRUNOFF

PROJECT

Hazard Prioritisation and Risk Assessment Exercise

Workshop
xxxxxx



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Aims

- Use planning and response tools developed by Hazrunoff.
- Undertake Hazard Prioritisation Exercise
 - Apply Source-Pathway-Receptor Process
 - Install and use Pollutant Database
 - Evaluate Prioritisation Results
- Complete Risk assessment Exercise
 - Install Water Risk Assessment Tool (WRAT)
 - Import and analyse test data sets
 - Evaluate Results



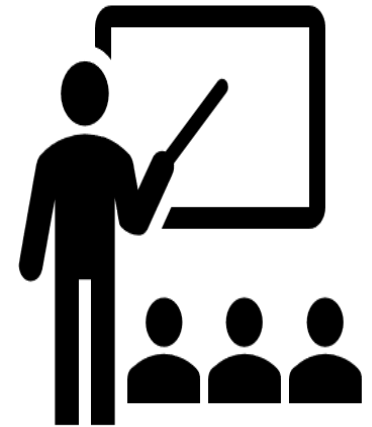
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Hazard Prioritisation Exercise

- Concerns have been raised about potential pollution hazards associated with a stretch of river in your area, where erosion and flooding have been occurring.
- Having limited resources you cannot cover every potential eventuality so have been asked to identify priority pollutants that may pose a hazard to health or the environment.



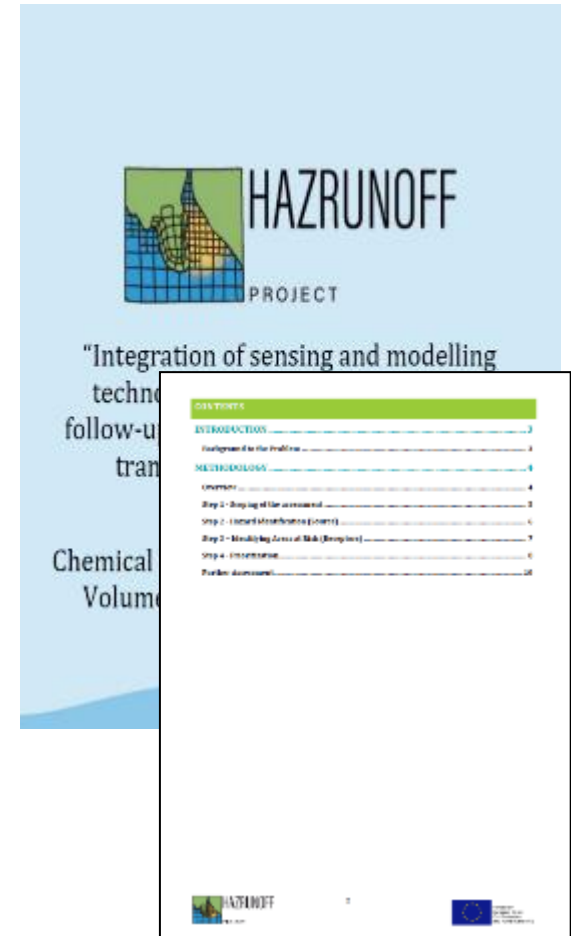
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Hazard Prioritisation Exercise

- You have heard of a project called Hazrunoff, which has many tools to help you
- You download the prioritisation tool
- <http://www.hazrunoff.eu/planning-training-and-exercising-for-response/>



Task 1

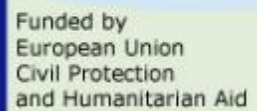
- Following the framework what are the key initial steps you should undertake ?
- 5 minutes group discussion
 - Scoping of your area
 - Area of concern
 - 5 m contour line
 - Sources of pollution
 - Potential receptors

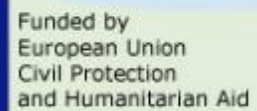


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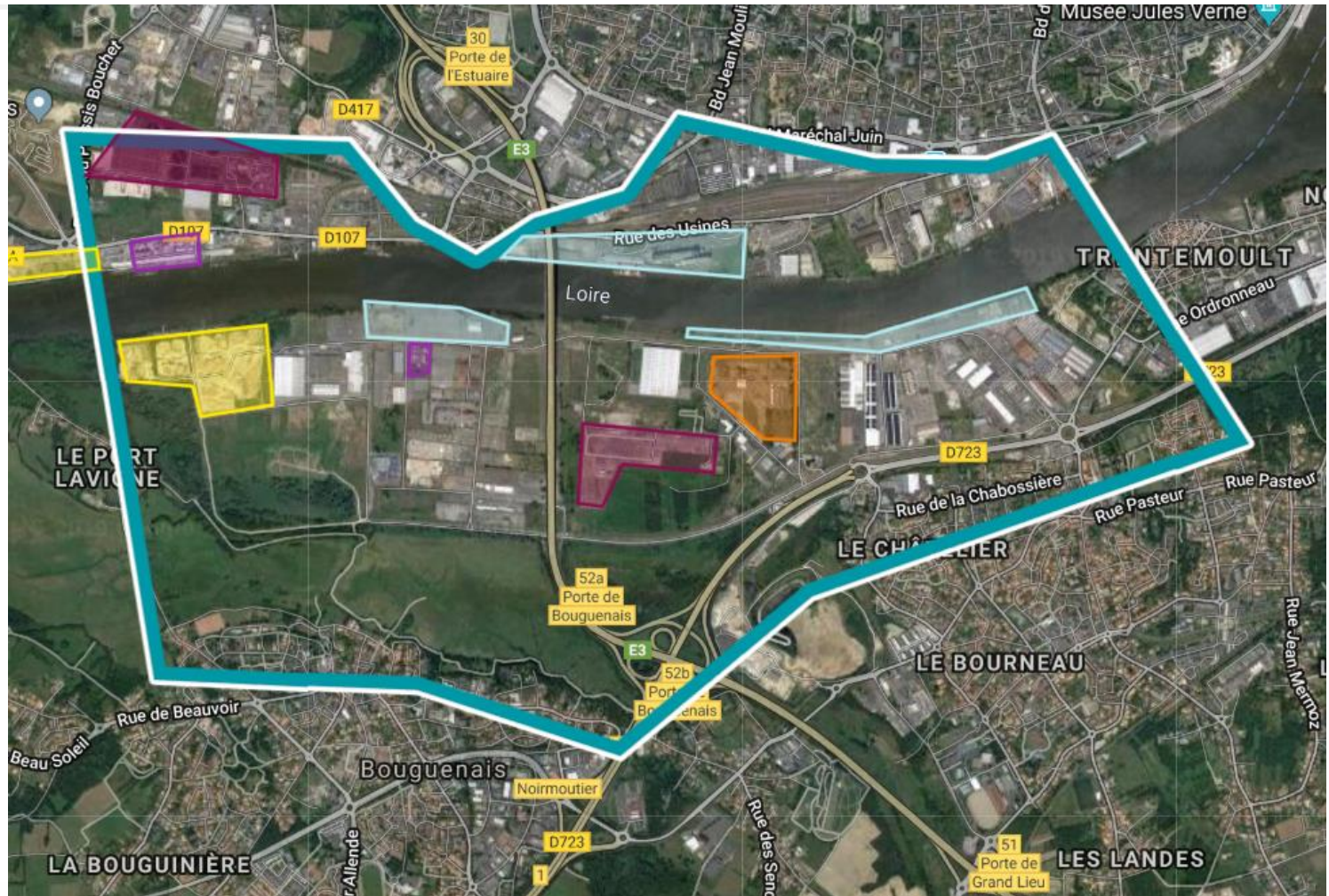
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[illegible]

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Source

- WWT
- Oil Terminal
- Aggregates
- Chemicals (Wine?)
- Dock
- Dock
- Power - Sub-station
- Waste - Recycling
- Aggregates
- Dock

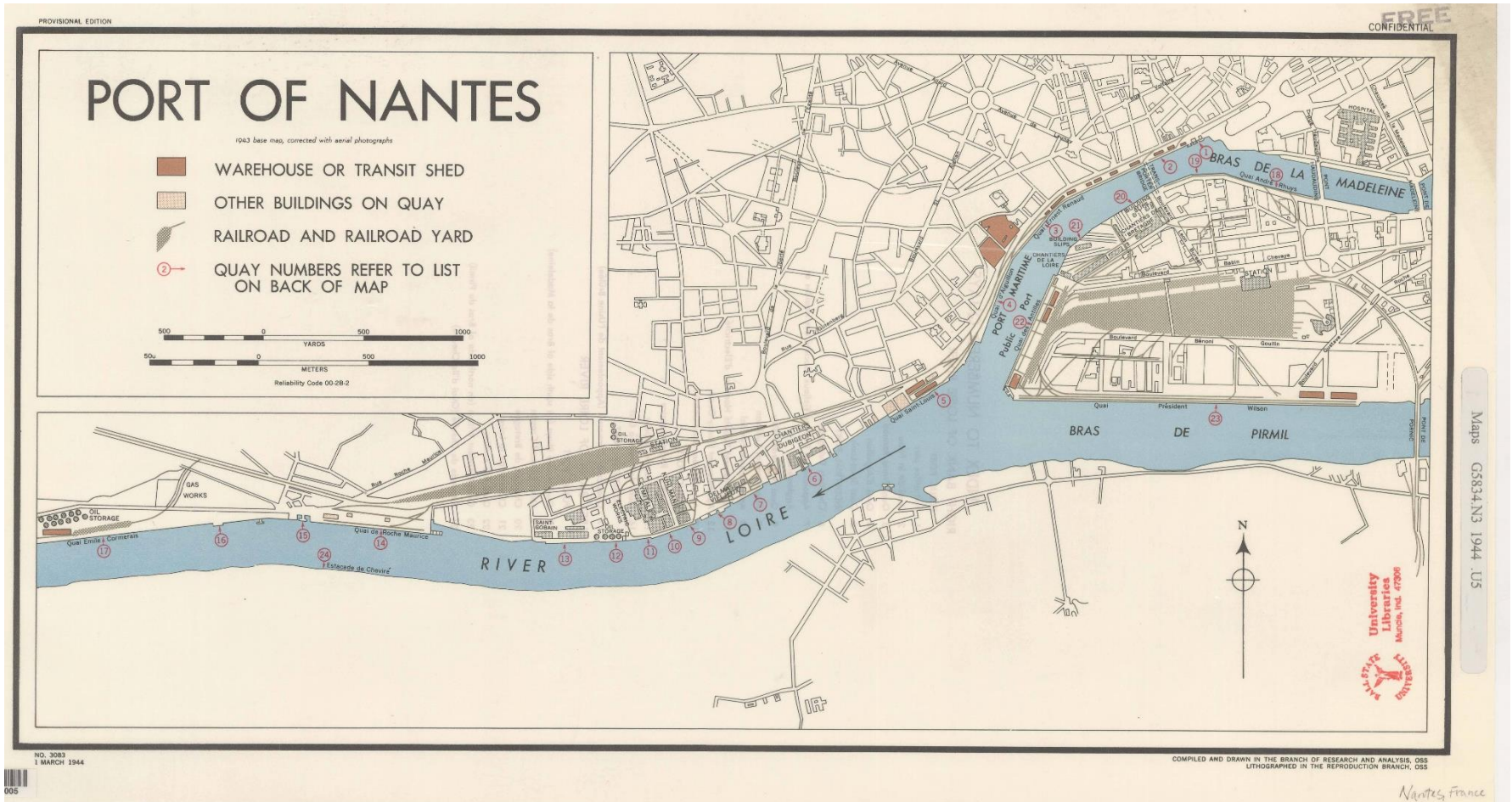


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Source - Historical



Source - Historical

- Oil - 1944
- Oil - 1944
- Power - Electric Works - 1944
- Power - Gasworks 1944



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Receptors



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Pollutants

1	Number of facilities	Industry		Key Chemical Pollutant Types												
2			Asbestos	Metals and Metalloids	Ammonia	Nitrates / Nitrites	Coal tar PAH	PCB	Dioxins	BTEX	Oils	Phenols	Pesticides	Chlorinated Solvents	Alcohols	TBT / organo tin
3		Principal														
4		Docks	(++)	(+)			(+)	(+)	(+)	(+)	(+)	(+)	(+)	(+)	(+)	(++)
5		Oil and gas Refining / storage	(+)	(+)			(++)	(+)		(++)	(++)	(+)	(+)		(++)	
6		Power (not nuclear)	(+)	(++)	(+)		(++)		(+)		(++)		(+)			
7		Gasworks, Coke Works Coal Carbonisation	(+)	(++)	(++)		(++)			(++)		(++)				
8		Aggregates / Cement	(+)	(++)			(++)		(++)		(+)					
9		Iron and steel making	(+)	(++)	(++)		(++)	(++)	(+)	(++)	(++)	(++)				
10		Sewage Works		(+)	(++)	(++)						(+)	(++)			
11		Landfills / infilled ground	(++)	(++)	(++)		(++)	(++)	(+)	(+)	(+)	(+)	(+)	(++)		
12		Railway Engineering	(++)	(++)			(++)	(++)	(+)	(++)	(++)	(++)	(++)	(+)	(+)	
13		Agriculture			(++)	(++)				(+)	(+)		(++)			
14		Mining		(++)												
15		Burial Grounds			(++)	(++)							(++)			
16		Airports	(+)				(+)	(+)		(++)	(++)					
17		Military Facilities	(++)					(++)		(++)	(++)		(+)			
18		Food Processing (Fish)			(++)		(+)									
19		Ancillary														
20		Chemical Works (General)*	(+)		(+)	(+)	(+)	(+)		(++)	(++)	(+)	(+)	(+)	(+)	
21		Tank / Drum Cleaning								(++)	(++)	(+)		(+)	(+)	
22		Metal works - Finishing	(+)	(+)	(+)			(+)		(++)	(++)			(++)	(+)	
23		Animal rendering			(+)	(+)							(++)			
24		Ship breaking	(++)	(++)				(++)		(++)	(++)	(+)		(++)	(+)	(++)
25		Electrical Substations						(++)			(+)		(+)			
26		Garages / Petrol Stations	(+)							(++)	(++)					
◀ ▶		Introduction	Industry Profile	Worksheet (Health)	Worksheet (Ecological)	Chemical data	References	+	⋮		◀					



Summary Table

Source	Number	Pollutants



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Summary Table

Source	Number	Pollutants
Waste Water	1	NO3, PO4, Ammonia , Pesticides, metals
Oil Terminal	3	PAH, BTEX , Alkanes / Alkenes
Chemicals (Wine)	1	BOD
Aggregates	2	pH / Bases, metals
Docks	3	Asbestos, Ammonia (refrigeration), TBT
Power Electricity	2	PCB, PAH, BTEX, metals
Power Gas	1	PAH, BTEX , Phenols, Ammonia , CN, metals
Waste	1	Asbestos, metals , oils, chlorinated solvents



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Task 2

- Use the tool to prioritise the identified pollutants for human health and ecological receptors
- Evaluate Results
- 5 minutes



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Prioritisation

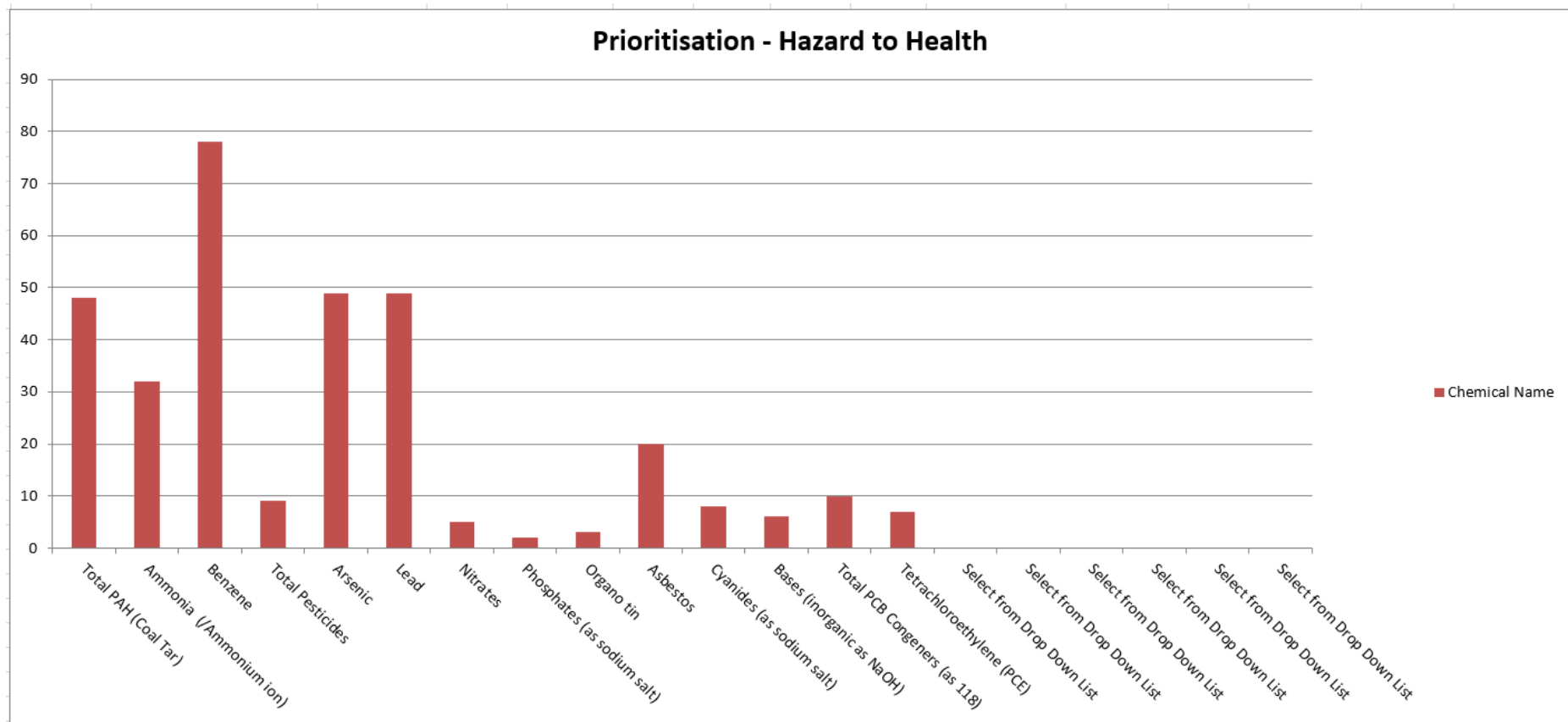
R28																		
	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T
3																		
4	Chemical Name	CAS No	Physical State	Behaviour	Acute 0-4	Chronic 0 or 4	Health Score	Aquatic Toxicity 0-4	Bioconcentration 0-4	Persistence 0-4	Eco Score	Flammability 0-3	Reactivity 0-3	Flammable / Reactive Hazard	Total Score (Health)	Behaviour Score (1 - 4)	Reactivity Score (1 or 0)	Weighting (Optional)
5	Arsenic	7440-38-2	S	S	2	4	6	2	0	4	6	0	0	0	49	1	0	7
6	Lead	7439-92-1	S	S	2	4	6	3	0	4	7	0	0	0	49	1	0	7
7	Ammonia (/Ammonium ion)	7664-41-7	L	E	4	0	4	2	0	1	3	1	0	0	40	4	0	5
8	Benzene	71-43-2	L	E	4	4	8	2	1	1	4	3	0	F	78	4	1	6
9	Total PAH (Coal Tar)	NA	L	S	2	4	6	4	3	2	9	2	0	F	48	1	1	6
10	Asbestos	1332-21-4	S	S	0	4	4	0	0	4	4	0	0	0	20	1	0	4
11	Nitrates	UN1477	S	D	2	0	2	1	0	1	2	0	3	R	5	2	1	1
12	Phosphates (as sodium salt)	7558-79-4	S	D	0	0	0	3	1	1	5	0	0	0	2	2	0	1
13	Cyanides (as sodium salt)	143-33-9	S	E	4	0	4	4	0	1	5	0	0	0	8	4	0	1
14	Bases (inorganic as NaOH)	1310-73-2	S	D	3	0	3	2	0	0	2	0	2	R	6	2	1	1
15	Total PCB Congeners (as 118)	1336-36-3	L	S	0	4	4	3	4	4	11	1	0	0	10	1	0	2
16	Total Pesticides	NA	S/L	S	4	4	8	4	4	3	11	0	0	0	9	1	0	1
17	Tetrachloroethylene (PCE)	127-18-4	L	S	2	4	6	2	2	1	5	0	0	0	7	1	0	1
18	Organo tin	36643-28-4	S	S	2	0	2	4	2	2	8	0	0	0	9	1	0	3
19	Kerosene AliphaticTPH (as Cyclohexane)	110-82-7	L	E	1	0	1	3	3	0	6	3	0	F	18	4	1	3
20	Phenol	108-95-2	S	D	4	0	4	3	1	0	4	2	0	F	7	2	1	1
21	Select from Drop Down List	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
22	Select from Drop Down List	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
23	Select from Drop Down List	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
24	Select from Drop Down List	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
25																		



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Benzene, PAH, Metals, Ammonia



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Using the Results

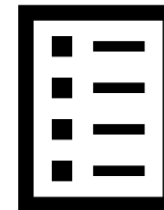
Detailed risk assessments

- Inform fate and transport models
- Inform monitoring programmes
- Inform chemical data sheets



Develop contingency plans

- Develop Exercises and training

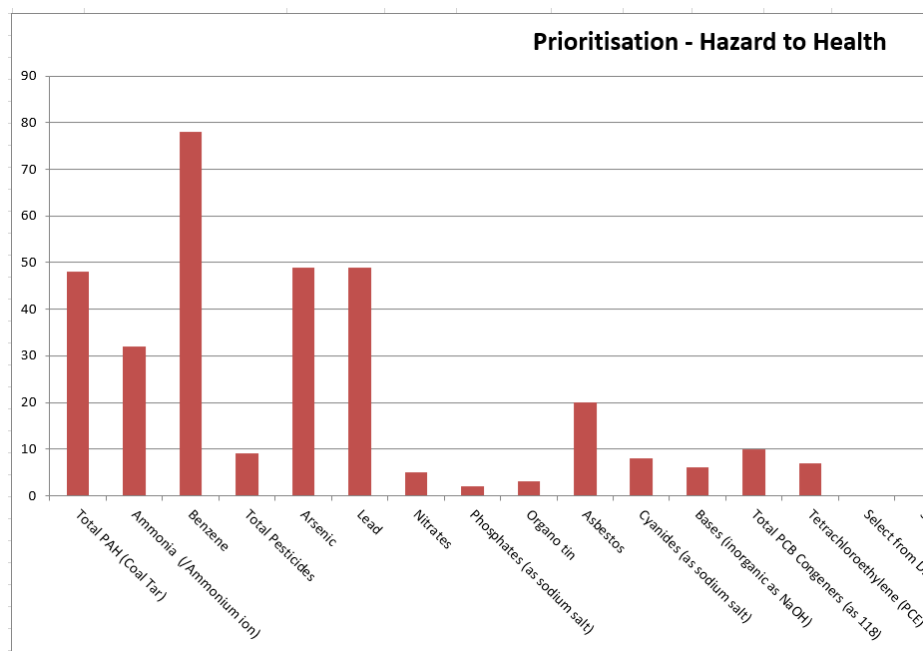
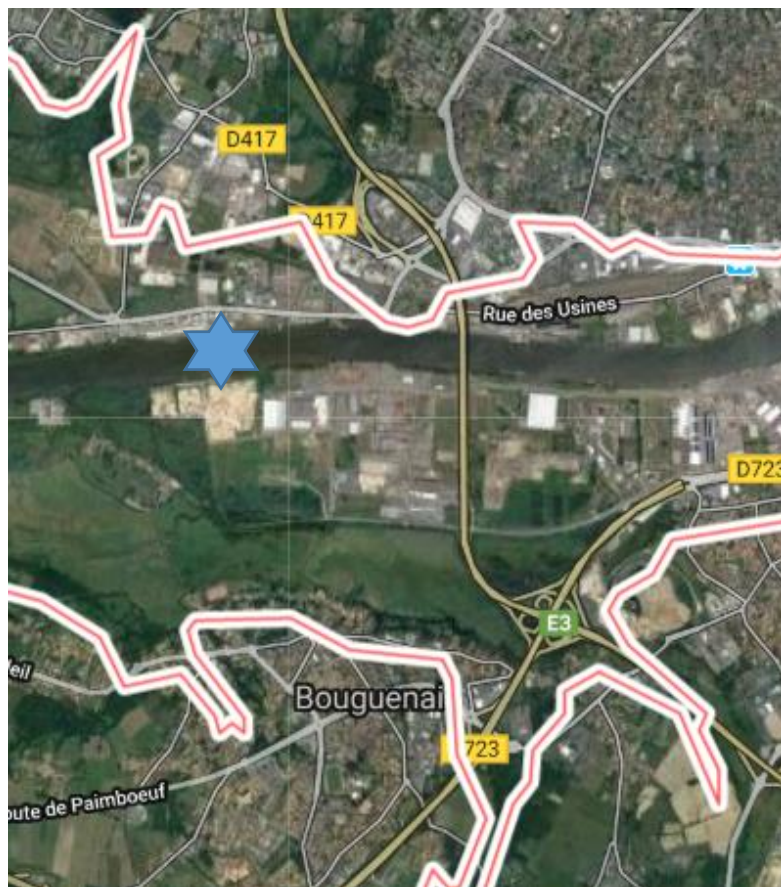


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Continuous Monitors installed for priority pollutants



BTEX, PAH, Ammonium, EC
(metals)



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Task 3

- Download the Water RAT tool
- Use the tool to assess the monitoring data provided.
- Evaluate your results
- 10 minutes

Download from <http://www.hazrunoff.eu/detecting-sensing-and-sampling/>



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Water: Rapid Assessment Tool Instructions for use



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ENDEX / Final Remarks

Help Advise tactical and strategic management & co-ordination groups

“Peace-time”

- Prioritise Potential Hazards
- Identify areas to study in depth / monitor

Incident

- Assess Immediate risks
- Inform response
- Aid warning and informing
- Assess Longer term issues



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