

**Environment Statistics Training - FDES Chapter 3.1 Environmental Quality**

1. Region with 3 water quality monitoring stations
2. Compare water quality data with WHO guidelines
3. Higher than guideline = exceedence



Drinking water guidelines (from WHO)

Substance	Source	Guideline	Measure
Fecal coliform (e coli)	Dwellings, Livestock	0	count/100 ml
Chromium	Industrial, Dwellings	0.05	mg/l
Cadmium	Industrial, Dwellings	0.003	mg/l
Benzene	Industrial, Fuel, Dwellings	10	µg/l
Nitrate (NO <sub>3</sub> )	Agriculture	50	mg/l
2,4-D (2,4-dichlorophenoxyacetic acid)	Agriculture	30	mg/l

**Units**

mg = 1/1000g

µg = 1/1000000g

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4. Note yes if exceeded, no if not exceeded guidelines
5. Calculate % of parameters (on same date) exceeded
6. Is water safe to drink (no exceedences)
7. What is biggest water quality problem (% of samples exceeded)

**Water quality data**

Station	Date	Parameter	Reading	Units	Exceed?	% parameters exceeded	Safe to drink?
1	01/01/2017	Nitrate	80	mg/l			
		2,4-D	10	mg/l			
		Fecal coliform	0	count/100ml			
	03/03/2017	Nitrate	40	mg/l			
		2,4-D	20	mg/l			
		Fecal coliform	0	count/100ml			
	05/06/2017	Nitrate	90	mg/l			
		2,4-D	40	mg/l			
		Fecal coliform	2	count/100ml			
	03/09/2017	Nitrate	120	mg/l			
		2,4-D	60	mg/l			
		Fecal coliform	0	count/100ml			
2	01/01/2017	Benzene	5	µg/l			
		Cadmium	0.005	mg/l			
		Fecal coliform	3	count/100ml			
	03/03/2017	Benzene	6	µg/l			
		Cadmium	0.002	mg/l			
		Fecal coliform	5	count/100ml			
	05/06/2017	Benzene	12	µg/l			
		Cadmium	0.006	mg/l			
		Fecal coliform	12	count/100ml			
	03/09/2017	Benzene	2	µg/l			
		Cadmium	0.001	mg/l			
		Fecal coliform	3	count/100ml			
3	01/01/2017	Nitrate	40	mg/l			
		Chromium	0.07	mg/l			
		Fecal coliform	0	count/100ml			
	03/03/2017	Nitrate	30	mg/l			
		Chromium	0.04	mg/l			
		Fecal coliform	0	count/100ml			
	05/06/2017	Nitrate	60	mg/l			
		Chromium	0.03	mg/l			
		Fecal coliform	0	count/100ml			
	03/09/2017	Nitrate	80	mg/l			
		Chromium	0.04	mg/l			
		Fecal coliform	0	count/100ml			

Percentage of exceedences by substance

Substance	Number of samples	Number of exceedences	% of samples exceeded
Fecal coliform			
Chromium			
Cadmium			
Benzene			
Nitrate			
2,4-D			