1. About the treatment works

1a In which country is the plant located?

☐ Belgium ☐ Denmark ☐ Finland
☐ France ☐ Germany ☐ Italy
☐ Netherlands ☐ Norway ☐ Spain
☐ Sweden ☐ Switzerland ☐ UK

1b What type of watercourse is the treated water discharged into? (Please tick nearest box which applies)

☐ An upland lake ☐ A lowland lake
☐ A river ☐ An estuary ☐ The sea

Other (please state) .....

1c What is the design capacity of the plant? .....
(million m^3 per year)

What is the actual capacity of the plant? .....
(million m^3 per year)

What is the approximate domestic population served by the plant

..... (person equivalents)

What is the contribution of industrial sources to the plant?

..... (person equivalents)

1d Which of the following treatments are done in the plant?

	Secondary	Tertiary
☐ Primary only	☐ Biological filtration	☐ P removal
	☐ Activated sludge	☐ N removal

1e If P removal is performed, which method is used?

Chemical	Non-chemical
☐ Pre-precipitation	☐ Biological
☐ Simultaneous precipitation	Other (please state) .....
☐ Post-precipitation	

2. About the wastewater entering the plant

2a What percentage of the phosphorus in the wastewater entering the plant would you estimate comes from the following sources?

Detergents ..... %
Other human sources ..... %
Industrial ..... %
Other sources (please state)
.... %

2. About the wastewater entering the plant (continued)

2b Approximately how much wastewater enters the plant per day?

Minimum .....

Average .....

Maximum .....

Thousand m^3 per day

2c What is the typical concentration of the following substances in the wastewater entering the plant?

All figures in mg/l	Minimum	Average	Maximum
Suspended solids*	.....	.....	.....
COD	.....	.....	.....
BOD_7	.....	.....	.....
Total Phosphorus	.....	.....	.....
Total Nitrogen	.....	.....	.....
Zeolite A	.....	.....	.....
Polycarboxylates	.....	.....	.....
Cadmium	.....	.....	.....
Mercury	.....	.....	.....

(* includes Zeolite A)

3. About the treated water discharged from the plant

3a Approximately how much treated water is discharged from the plant per day?

Minimum .....

Average .....

Maximum .....

Thousand m^3 per day

3b What percentage of the following substances would you estimate to be removed from the wastewater by treatment in the works?

All figures as %	Minimum	Average	Maximum
Suspended solids*	.....	.....	.....
COD	.....	.....	.....
BOD_7	.....	.....	.....
Total Phosphorus	.....	.....	.....
Total Nitrogen	.....	.....	.....
Zeolite A	.....	.....	.....
Polycarboxylates	.....	.....	.....
Cadmium	.....	.....	.....
Mercury	.....	.....	.....

(* includes Zeolite A)

4. About the sludges leaving the plant

4a What is the percentage (by weight) of solids in the sludges leaving the plant?

.....%

4b What is the volume of sludge disposed of per day?

Minimum ..... Average .....

Maximum ..... m³/day

4c What is the weight of sludge disposed of per day?

Minimum ..... Average .....

Maximum ..... tonnes/day

4d Which of the following methods are used to dispose of the sludge? Approximately how far is it transported from the plant?

	% by weight	distance (miles)
Agriculture (arable)	.....	.....
Agriculture (pasture)	.....	.....
Horticulture	.....	.....
Land reclamation	.....	.....
Landfill	.....	.....
Incineration	.....	.....
Sea - by boat	.....	.....
Sea - by pipeline	.....	.....
Other (please specify)		
.....	.....	.....

4e What is the concentration of the following substances in the sludge?

All figures in mg/l	Minimum	Average	Maximum
Total phosphorus	.....	.....	.....
Total nitrogen	.....	.....	.....
Zeolite A	.....	.....	.....
Polycarboxylate	.....	.....	.....
Cadmium	.....	.....	.....
Mercury	.....	.....	.....

4f What is the calorific value of the sludge?

Minimum ..... Average .....

Maximum ..... MJ/kg dry solids

5. About the lake (If the receiving water is not a lake go to next section)

5a What is the surface area of the lake? ..... m²

5b What is the approximate residence time for water in the lake? ..... yr

5c What is the concentration of the following substances in the lake? (mg/l)

Total phosphorus .....

Total nitrogen .....

Zeolite A .....

Polycarboxylates .....

5d For phosphorus entering the lake what is the estimated contribution from the following sources?

This treatment works	..... %
Other treatment works	..... %
Natural background	..... %
Agricultural runoff	..... %
Other souces	..... %

5e What is the estimated dilution rate for substances discharged into the lake from this treatment works?

Minimum ..... Average .....

Maximum ..... %

6. About the river (If the receiving water is not a river go to next section)

6a What is the flow rate and velocity of the river outside the treatment works?

Flow rate (m^3/sec)		Velocity (m/sec)	
Minimum	.....	Minimum	.....
Average	.....	Average	.....
Maximum	.....	Maximum	.....

6b What is the estimated concentration of the following substances in the water just upstream of the treatment works?

	(mg/l)		(mg/l)
Total phosphorus	.....	Total nitrogen	.....
Zeolite A	.....	Polycarboxylates	.....

6c For the phosphorus content of the water just upstream of the plant, what is the estimated percentage coming from the following sources?

Other treatment works	..... %
Natural background	..... %
Agricultural runoff	..... %
Other sources	..... %

6d What is the estimated dilution rate for substances discharged from the treatment works into the river?

Minimum ..... Average .....

Maximum ..... %

7. About the estuary or sea (If not an estuary or sea, go to next section)

7a What is the estimated concentration of the following substances in the sea or estuary close to the treatment plant?

	(mg/l)
Total phosphorus	.....
Total nitrogen	.....
Zeolite A	.....
Polycarboxylates	.....

7b What is the estimated contribution of the treatment works to the total phosphorus discharged into the sea or estuary?

..... %

8. Do you have any comments or opinions to make about the effects of phosphates, zeolite A and polycarboxylates on the operations of the treatment plant, on the receiving waters or in the use of the sludges produced?

Thank you for your help. Please return the completed questionnaire to:-

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