Tacis

Caspian Environment Programme

Phase 2

Pollution Database

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Chapter 1. Introduction

Information on pollutants is processed and analysed by the Caspian Centre for Pollution Control based on data and information received from official local experts in accordance with predetermined terms of reference. The report has been funded by EU TACIS Phase 2 support to the Caspian Environment Programme.

This report is prepared by Gulshan Huseynova, CCPC Database Expert. The studies were carried out with assistance from Latifa Huseynova, Technical Coordinator CCPC and Arne Jensen Team Leader CCPC, DHI. The database was developed and improved by Nadir Bayramov, Database Expert and Irina Nosyreva, Programmer.

The aim has been to review pollution sources discharging to the Caspian Sea.

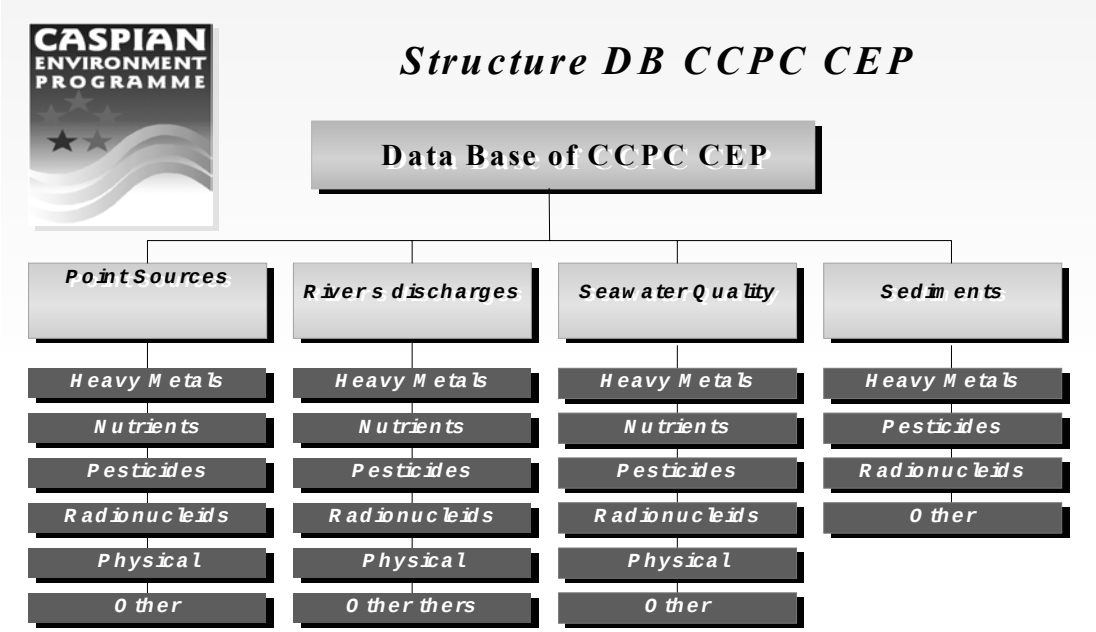
Compiled data have been processed, analysed and included in the CCPC's database. Undoubtedly, some information on Caspian pollution and pollution parameters is still missing. However, this report is useful for the following reasons:

- an approach to the environmental issues is determined; and
- the information contained has enabled conclusions to be drawn on the needs for the environmental laboratories, analysis methods and techniques, legal issues, etc.

Environmental information and information on environmental change has always been necessary for management of the environment surrounding the community, and environmental changes in the Caspian region has been monitored on a regular basis for the last 50 years. Increased environmental impact from human activity and uncontrolled natural resources consumption has, in the meantime, caused negative effects. Now more detailed and objective environmental information on Caspian Sea is needed. In order to proceed, at least approximate environmental assessment and analysis of many different types of information is required. For this reason the CCPC Database has been developed. The Database has accumulated materials and information supplied to the Centre since February 1999.

Similar data and information have been required from all Caspian countries. The data collection scheme is described in a separate report.

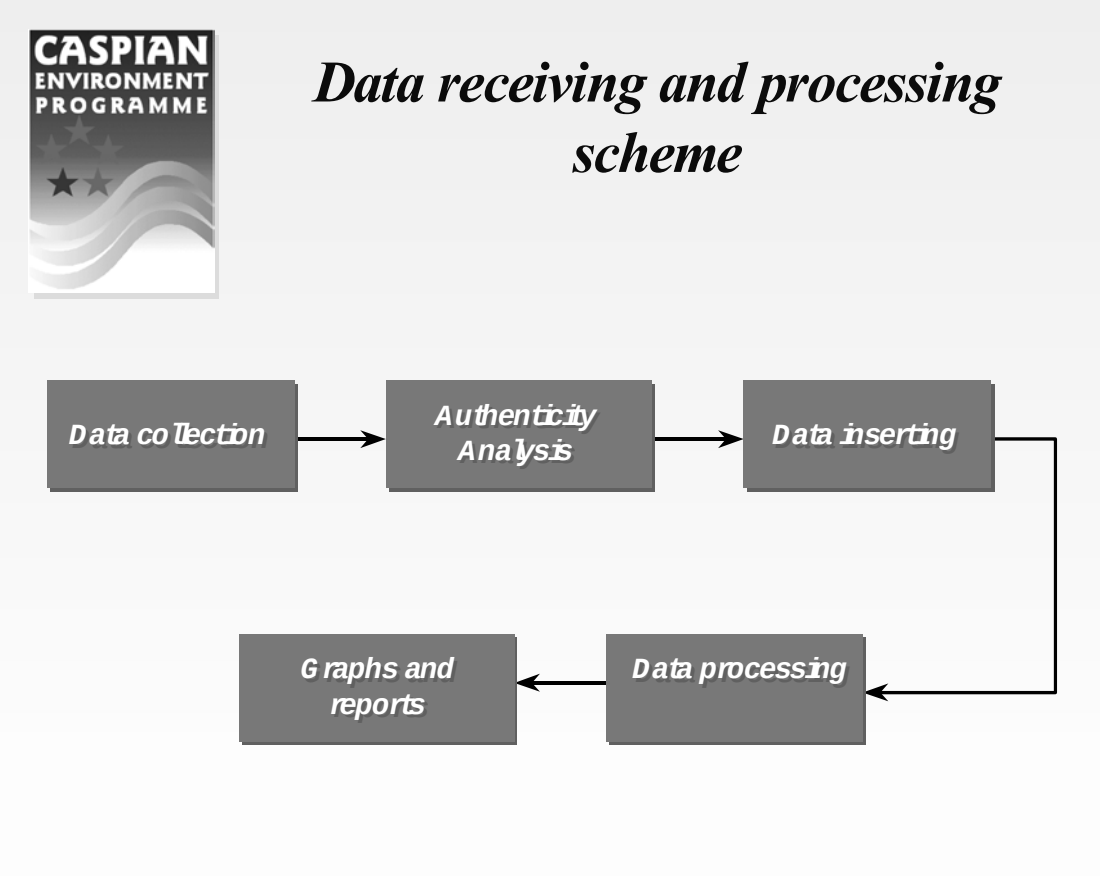
This Report presents a review of data received from the Caspian countries, of which the sources of information were mainly state environmental authorities. The database structure is described bellow:



Collected data include the following:

- Industrial wastewater from Azerbaijan, Russia, Kazakhstan, Turkmenistan
- Municipal wastewater from Azerbaijan, Russia, Kazakhstan, Turkmenistan
- River water monitoring from Azerbaijan, Kazakhstan, Russia and Iran
- Seawater monitoring from Azerbaijan, Kazakhstan, Russia, Turkmenistan and Iran.
- Sediments monitoring from Azerbaijan, Kazakhstan, Russia and Iran.

All data in the CCPC Database have been processed in the following way:



The main goal of the present report is information exchange and recommendations for further activities.

Chapter 2. Industrial Wastewater

The List of Industries is presented in Appendix 2:

1. Column: Name of the industry
2. Column: Coordinates of industries
3. Column: Year of sampling
4. Column: Sampling frequency
5. Column: Flow
6. Column: Analysed contaminants

Chapter 3. Municipal Wastewater

The list of Municipal wastewater is presented in Appendix 3:

7. Column: Municipal Facility
8. Column: Discharge point coordinates
9. Column: Year of sampling
10. Column: Sampling frequency
11. Column: Flow
12. Column: Analysed contaminants

Chapter 4. River water monitoring stations

The river monitoring data is presented in the Appendix 4:

1. Column: River
2. Column: Monitoring station
3. Column: Coordinates of monitoring station
4. Column: Year of Sampling (most often 1990, 1997 and 1998).
5. Column: Sampling frequency per year
6. Column: Flow
7. Column: Analysed contaminants

Chapter 5. The Caspian Sea – Monitoring Station

Seawater monitoring list is presented in Appendix 5:

1. Column: no. Name of monitoring station, no. of sampling points
2. Column: Coordinates of monitoring stations
3. Column: Year of Sampling (most often 1990, 1997 and 1998).
4. Column: Sampling frequency per year
5. Column: Analysed contaminants

Chapter 6. The Caspian Sea – Sediment monitoring stations

Sediment monitoring list is presented in Appendix 6:

1. Column: no. Name of monitoring station, no. of sampling points
2. Column: Coordinates of monitoring stations
3. Column: Year of Sampling
4. Column: Sampling frequency per year
5. Column: Analysed contaminants

Data was received from Azerbaijan, Kazakhstan, Russia and Iran.

Chapter 7. Structure of Database Tables

Table 7-1 Structure the tables of Point Sources

Row1	Row2	Row3	Row4	Row5	Row6
Heavy Metals	Nutrients	Pesticides	Physical	Radionucleids	Other
StalID	StalID	StalID	StalID	StalID	StalID
Data	Data	Data	Data	Data	Data
Period	Period	Period	Period	Period	Period
Flow	Flow	Flow	Flow	Flow	Flow
FeSign	NO2-N	Aldrin	Temperature	Sr	HC
Fe	NO3-N	PP-DDESign	O2	Ra	Cyanides
Cu	NH4-N	PP-DDE	ConductivitySign	Cs	Detergents
HgSign	Total_N	PP-DDDSign	Conductivity	Th	PhenolSign
Hg	PO4-P	PP-DDD	pH	K	Phenol
Cd	Total_P	OP-DDTSign	NoteEng	U	E-ColiSign
Pb	SiO2	OP-DDT	NoteRus	NoteEng	E-Coli
Zn	NoteEng	PP-DDTSign		NoteRus	Total Coliform
Cr	NoteRus	PP-DDT			FeacalSign
Mg		Dielrin			Feacal Coliform
Al		Heptochlor			Total Count
Ni		Heptochlor ep.			BOD
As		A-HCH			COD
Mn		B-HCH			TSS
Ba		G-HCH			NoteEng
Co		D-HCH			NoteRus
Vsign		Lindane			
V		Methoxychlor			
Ti		NoteEng			
Sr		NoteRus			
NoteEng					
NoteRus					

Table 7-2 Structure the tables of Rivers discharges

Row1	Row2	Row3	Row4	Row5	Row6
Heavy			Physical		Other
StalID	StalID	StalID	StalID	StalID	StalID
Data	Data	Data	Data	Data	Data
Period	Period	Period	Period	Period	Period
Flow	Flow	Flow	Flow	Flow	Flow
FeSign	NO2-N	Aldrin	Temperature	Sr	HC
Fe	NO3-N	PP-	Oxygen	Ra	Cyanides
Cu	NH4-N	PP-DDE		Cs	Detergents
HgSign	Total N	PP-	Conductivity	Th	PhenolSign
Hg	PO4-P	PP-DDD	pH	K	Phenol
Cd	Total P	OP-	Salinity	U	E-ColiSign
Pb	SiO2	OP-DDT	NoteEng	NoteEng	E-Coli
Zn		PP-	NoteRus	NoteRus	Total Coliform
Cr		PP-DDT			FeacalSign
Mg		Dielrin			Feacal
Al					Total Count
Ni					BOD
As		A-HCH			COD
Mn		B-HCH			TSS
Ba		G-HCH			NoteEng
Co		D-HCH			NoteRus
Vsign		Lindane			
V					
Ti		NoteEng			
Sr		NoteRus			
NoteEng					
NoteRus					

Table 7-3 Structure the tables of Seawater Monitoring Stations

Row1	Row2	Row3	Row4	Row5	Row6
Heavy Metals	Nutrients	Pesticides	Physical	Radionucleids	Other
StalID	StalID	StalID	StalID	StalID	StalID
Data	Data	Data	Data	Data	Data
Period	Period	Period	Period	Period	Period
Depth	Depth	Depth	Depth	Depth	Depth
FeSign	NO2-N	Aldrin	Temperature	Sr	HC
Fe	NO3-N	PP-DDESign	Oxygen	Ra	Cyanides
Cu	NH4-N	PP-DDE	ConductivitySign	Cs	Detergents
HgSign	Total N	PP-DDDSign	Conductivity	Th	PhenolSign
Hg	PO4-P	PP-DDD	pH	K	Phenol
Cd	Total P	OP-DDTSign	Salinity	U	E-ColiSign
Pb	SiO2	OP-DDT	Transparency	NoteEng	E-Coli
Zn	NoteEng	PP-DDTSign	NoteEng	NoteRus	Total Coliform
Cr	NoteRus	PP-DDT	NoteRus		FeacalSign
Mg		Dielrin			Feacal

Row1	Row2	Row3	Row4	Row5	Row6
Al		Heptochlor			Total Count
Ni		Heptochlor ep.			BOD
As		A-HCH			COD
Mn		B-HCH			TSS
Ba		G-HCH			NoteEng
Co		D-HCH			NoteRus
Vsign		Lindane			
V		Methoxychlor			
Ti		NoteEng			
Sr		NoteRus			
Se					
NoteEng					
NoteRus					

Table 7-4 Structure the tables of Sediment Monitoring Stations

Row1	Row2	Row3	Row4
Heavy Metals	Pesticides	Radionucleids	Other
StalID	StalID	StalID	StalID
Data	Data	Data	Data
Period	Period	Period	Period
Depth	Depth	Depth	Depth
FeSign	Aldrin	Sr	HC
Fe	PP-DDESign	Ra	PhenolSign
Cu	PP-DDE	Cs	Phenol
HgSign	PP-DDDSign	Th	NoteEng
Hg	PP-DDD	K	NoteRus
Cd	OP-DDTSign	U	
Pb	OP-DDT	NoteEng	
Zn	PP-DDTSign	NoteRus	
Cr	PP-DDT		
Mg	Dielrin		
Al	Heptochlor		
Ni	Heptochlor ep.		
As	A-HCH		
Mn	B-HCH		
Ba	G-HCH		
Co	D-HCH		
VSign	Lindane		
V	Methoxychlor		
Ti	NoteEng		
Sr	NoteRus		
NoteEng			
NoteRus			

Chapter 8. Summary

8.1. Industrial Wastewater

- For some parameters units are not given and sometimes they are unclear.
- Some industries have not reported flow, which makes load calculation impossible.
- Some coordinates for industries and discharge points are missing.
- Limited and sometimes no data for heavy metals, oil products, detergents and phenols.

8.2. Municipal Wastewater

- No data for Iran and Turkmenistan.
- Flows are not mentioned.
- No data on bacteriology pollution of municipal wastewater.
- Limited and sometimes no data for heavy metals, oil products, detergents and phenols.
- Sometimes units are unclear.

8.3. Rivers

- No flows quoted in association with the data, although flow data is available from elsewhere.
- Limited number of parameters.
- N-Total, P-Total and oil products – irregular measurements.
- Heavy metals and xenobiotics are more or less absent.
- Measurement frequency varied from country to country (1-12).

8.4. Seawater Monitoring Stations

- Limited number of parameters
- N-Total, P-Total included to monitoring programme
- Oil is measured infrequently.
- Heavy metals and xenobiotics are absent more or less.
- Measurement frequency varied from country to country (1-8)
- Chl-a (or algae biomass) are not included to the monitoring programme.
- Transparency is measured from data from the Russian Federation.

8.5. Sediment Monitoring Stations

- Sediment monitoring data is limited
- Selected parameters: heavy metals, HC
- Max frequency: once per year

Chapter 9. Recommendations

According to the assessment of regional laboratories, most of the inspected environmental laboratories do not provide ecotoxicological studies, measurements of radionucleids, AAS or Chromatography studies. It is essential that the laboratory systems are upgraded:

- To establish similarly equipped laboratories in each country.
- To provide methodical recommendations and unified standards.
- To provide training to the laboratory staff.
- To practice internal and external audit for QA/QC
- To establish a unified monitoring system and central database for information sharing.
- Data should be kept in electronic format.

Chapter 10. Conclusion

Number of human generated substances emitted to the environment is continuously increasing. Although the extensive list of substances contains thousands of names, the list is not final. It is obvious that human generated substances impacting the Caspian Sea environment should be subject to general parameter monitoring. Pollutants are influencing the Sea locally to their discharge point and throughout the Sea.

Data available regarding some parameters are incorrect because there are no united standards and similar analytical methods and equipment are not used.

Appendix 1: CCPC - Contact Information

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