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MED POL DATABASE MANAGEMENT AND ITS WEB PUBLICATION

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I. Introduction

Since the objectives of MED POL Phase III necessitate on time collection of monitoring data and a proper and timely processing and analysis of data, the Secretariat has established a complete work plan for restructuring the MED POL database. The development of the new database has planned to increase the data storage and management capabilities and additionally to achieve internet access.

The overall work was planned to be implemented in three sequential work packages and finalized during 2001-2003 period. The first work package included the design of the conceptual model of the database in every detail and it was finalized in the beginning of 2002. The conceptual model was then thoroughly discussed at an experts consultation meeting (14-15 March 2002, Athens), comments were obtained and the model was approved (see the document titled "Conceptual Design of the MED POL Phase III Database" UNEP(DEC)/MED WG.202/2, rev.9/4/2002) to be used as a basis for the second work package. The second work package, which includes the development and finalization of the Database and its modules, has recently been finalized and the details of it are presented in the current document. The last work package has been planned to cover working-out on technology of interaction between Database and Quality Assurance experts, solving of problems found during system exploitation and improvement of Database Modules and training of MED POL end users. Within the same work package, loading of all the available data submitted until mid 2003 will be completed. At present, most of the submitted data within the framework of ongoing MED POL Phase III monitoring programmes has already been loaded to the database as one of the steps of the second work package to test the database and identify the basic problems during data loading.

Additionally, in order to provide a smooth dataflow to the Secretariat and to avoid delays on data loading, data reporting formats to MED POL were standardized and distributed to the countries and laboratories during 2001. Since then countries have been submitting their monitoring data to MED POL using those formats.

The purpose of the current document is to provide a brief information about the developed database, to present the first-level web publishing of the database and to obtain comments/approval specifically for the data access policy to the MED POL database and for the exploitation of the web site.

II. MED POL Phase III Database Development and Management

As mentioned above, the development of the database and its modules was based on the approved conceptual model (UNEP(DEC)/MED WG.202/2, rev.9/4/2002) and have recently been finalized. The overall work done covers the following steps.

- Setting up of Database tables and relationships
- Initial filling of Database tables with reference and supplementary information
- Loading Database with monitoring data for period 1999-2001
- Development of the Data Management and Administration Module
- Preparation of static Web pages with Database information for MED POL Web Site
- Development of Internet Module for publishing of live Database information in Internet
- Testing of the Database

II.1 Database Set-up

As it was proposed in the document “Conceptual Design of the MED POL Phase III Database”, the *Microsoft Access* has been chosen as Data Base Management System for the MED POL Database. The name of the database file is **MEDPOL.mdb**. It was created using MS Access 2000, and is compatible with MS Access 2002. Both version of MS Access are part of the MS Office 2000, or MS Office XP correspondingly.

The Database structure is based on 39 interrelated tables for four main categories which are monitoring data, dictionaries, quality assurance and monitoring programmes. These tables were filled in with necessary information and the available monitoring data was loaded. The established links among these tables provide basis for the full functionality of the database. The detailed explanation of the table structures and the established links are presented in UNEP(DEC)/MED WG.231/Inf.8.

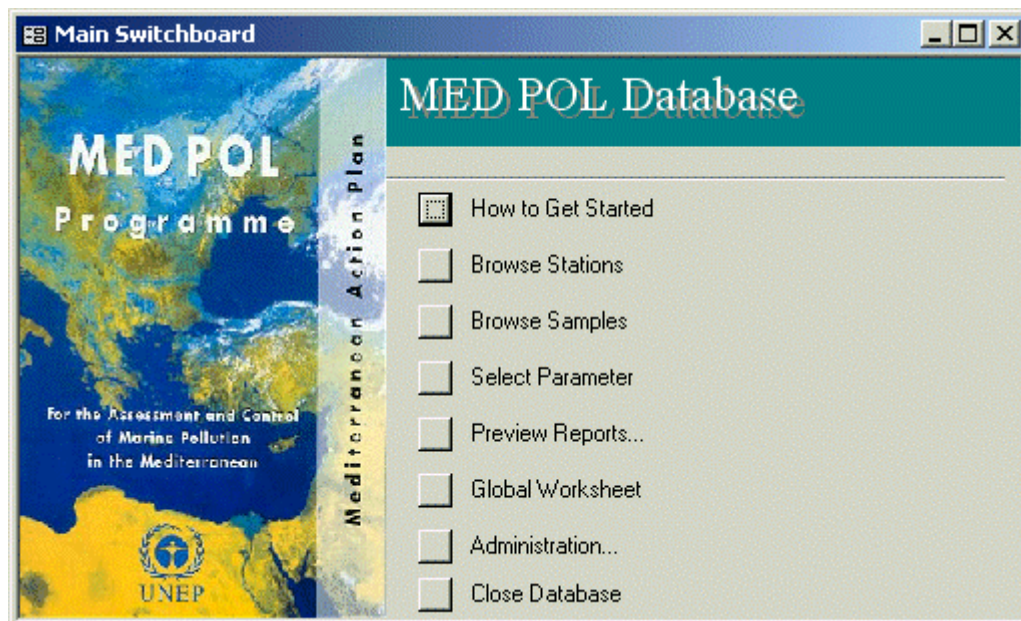
It is worth to note that a major problem has been faced during data loading to the Database that is the duplication created for different coordinates with the same station name (or the opposite). Although the official coordinates mentioned in the Monitoring Agreements were accepted as the basis for data reporting, any shifts in the coordinates (the real sampling points) which might occur during sampling should be reported preferably in the “methodology” section of the Annual Reports accompanied by data submissions, or comments should be provided by the data originator on data worksheets.

II.2 Data Management and Administration Module

MEDPOL Database Data Management and Administration module consists of a set of VBA (Visual Basic Application) modules which provide the following functions:

- Data loading
- Data browsing
- Data editing
- Selection of data on different criteria
- Visualization of data

Every VBA module (except mapping module and utilities) is part of some MS Access form. Set of these forms plus Map form (developed in Borland Delphi) and plus predefined queries and reports make up whole interface of the Data Management and Administration module. Special Switchboard form is developed for quick selection of necessary form, query or report. Main Switchboard form opens at startup and stays open as long as the Database is open.



At present, the total number of MEDPOL Database forms and sub-forms for report writing exceed 30, predefined queries - 20, and predefined reports - 10. The number of components will grow as required in process of Database exploitation.

Since MS Access doesn't possess the necessary tools for drawing maps, a special Map Module was developed for the visualization of station positions on a map of the Mediterranean using Borland Delphi 5. The functionality of this module is very similar to the Internet Map Module. In addition desktop Map Module has possibilities for zooming and includes embedded stations for quick identification of stations. A detailed description of all components of Data Management and Administration module is presented in document "MEDPOL Database User Manual" (see UNEP(DEC)/MED WG.231/Inf.8)

II.3 Internet module

This module consists of static HTML pages and dynamic active server pages. The overall combination of these pages have created the first level web version of the MED POL Database.

A set of static Web pages was prepared in order to publish general MEDPOL Phase III Programme information in Internet. This set consists of

- Web page with general description of the MED POL Phase III Monitoring objectives and activities
- Web pages with list of participating institutions for countries which have signed MED POL Phase III Monitoring Agreements with UNEP/MAP
- Web pages with list and map of monitoring stations for countries which have signed MED POL Phase III Monitoring Agreements with UNEP/MAP
- Web page with general thematic maps

In general, every Web page consists of HTML file linked to image file(s) and other document(s). Collection of all these files constitutes a ready-to-publish Web site - it is enough to place this collection on a Web server.

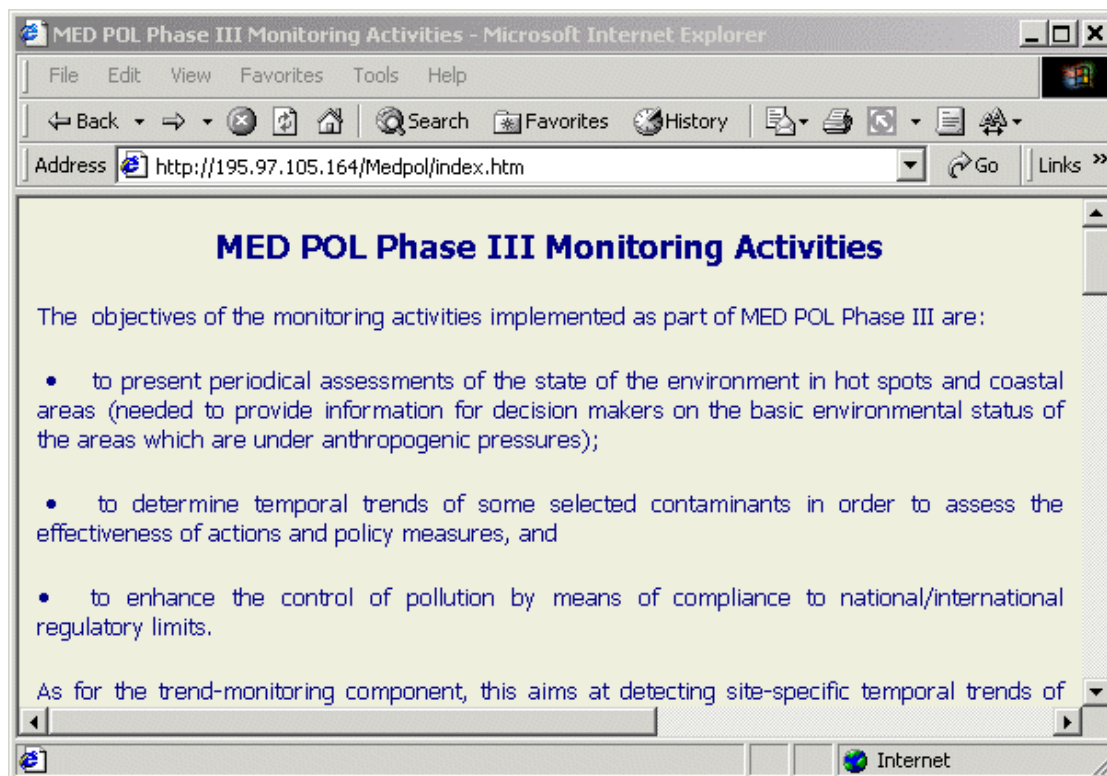
ArcView GIS package of ESRI Inc. was used for preparation of map for static Web pages. 15 different map were produced in total. Map information for individual countries was downloaded from the official Web site of the ESRI Inc., so the corresponding copyright note was placed below every individual country map on Web pages.

Dynamic active server page files are developed for presentation of the **MED POL Database** information in Internet. User can start work with Active Server Pages if he/she clicks on link to **Stations** or **Samples** query form found at bottom of the main Web page.

In December 2002 the Web site was published on the MED POL unit Web server for using in office intranet. Free access to Web site has recently been provided for Internet users. The working Web address is <http://195.97.105.164/Medpol> . This is a temporary address that can only be accessed by those who have been informed about it. Later in 2003 direct link will be established between the web publication of MED POL database and the www.unepmap.org so that anyone visiting the site will have the opportunity to access the present web version of the MED POL Database.

Get to know the Web Site

The main page that can currently be accessed through <http://195.97.105.164/Medpol> is presented below which provides fundamental information on the objectives and criteria of the MED POL Phase III monitoring programme together with the necessary links established.



From main Web page user can follow the links and find out

- Web pages with list of participating institutions for countries those have signed MED POL Phase III Monitoring Agreement with UNEP/MAP

Institute Name	Details	Responsible Investigator	Main Monitoring Activity	
Israel Oceanographic & Limnological Research	Tel Shikmona, P.O.B 8030, Haifa 31080 Tel: +972-4-8515202 Fax: +972-4-851911 E-Mail: barak@ocean.org.il	Dr. Barak Herut	State and trend monitoring in coastal and hot spot areas	Mir Infr
Israeli Public Health Laboratories	Ben-Zvi 69 Tel Aviv Tel: +972-2-6528079 Fax: +972-2-65280794 E-Mail: Ibdhbraham@matat.health.gov.il	Dr. Hila Ben-David	Compliance monitoring of bathing waters	Mir Hea
Private Laboratories (Under the standards of the Israel Laboratory Accreditation Authority) or academic institutes	Marine and Coastal Environment Division Ministry of the Environment alonz@environment.gov.il		Monitoring of effluents	Ma Co. Env Div Mir the Env

- Web pages with list and map of monitoring stations for countries those have signed MED POL Phase III Monitoring Agreement with UNEP/MAP

Med POL .html - Microsoft Internet Explorer

File Edit View Favorites Tools Help

← Back → Search Favorites History

Address <http://195.97.105.164/Medpol/hotspotscro.htm> Go Links >>

Monitoring activity

- Compliance (other than bathing waters)
- Biota
- Sediments
- Sea water
- Loads

0 50 100km

CROATIA

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Area Code	Station Code	Station Location	Monitoring Activity	Matrix	Latitude	Longitude
CRO 1	LU	Limski kanal – inside	Trend, bio-effects at hot spots	BIO, SED	44°58'00"	13°44'00"
CRO 1	LS	Limski kanal – middle	State, bio-effects at hot spots	BIO, SED	44°58'00"	13°41'00"
CRO 1	LV	Limski kanal – outside	State, bio-effects at hot spots	BIO, SED	44°58'00"	13°38'00"

Done Internet

- Web page with standardized MEDPOL reporting formats allowing to download the data filling tables in Excel, explanation of fields used in Excel tables in Word tables as well as the codes

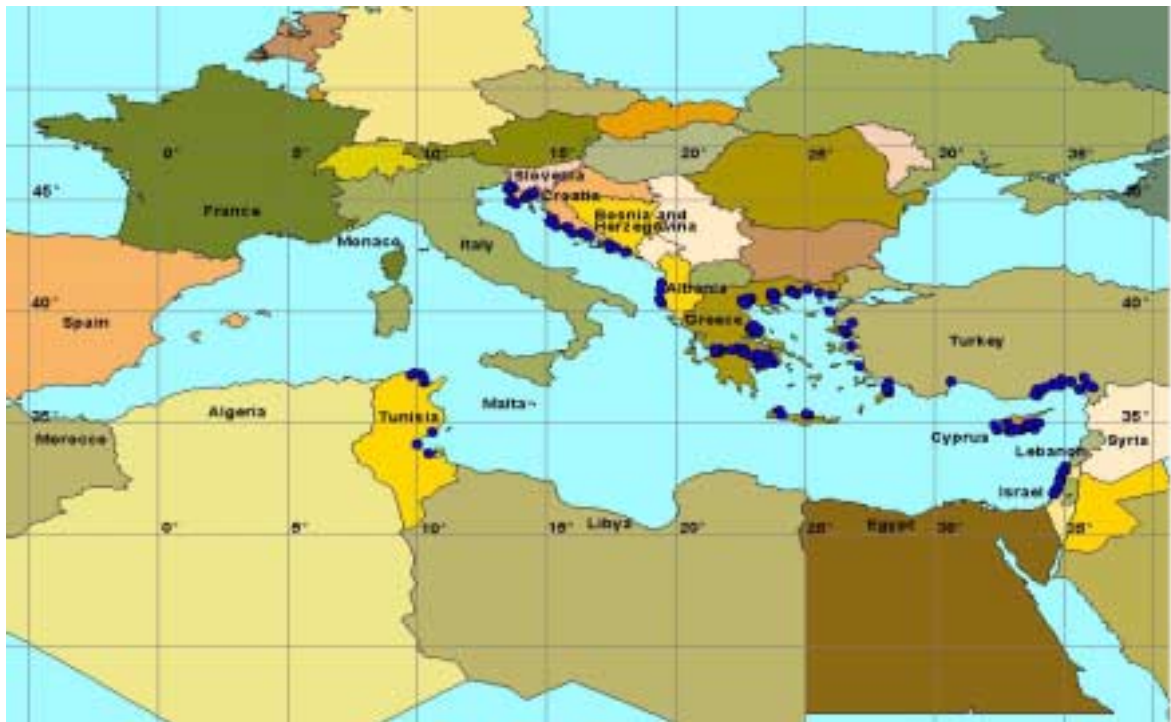
MEDPOL Phase III reporting formats for (State and) Trend Monitoring

Reporting formats for 11 different data types are listed in the table. Every format can be downloaded in two different forms: as MS Word document or as MS Excel worksheet template. Every format contains description of fields to be filled and usually consists of 3 parts:

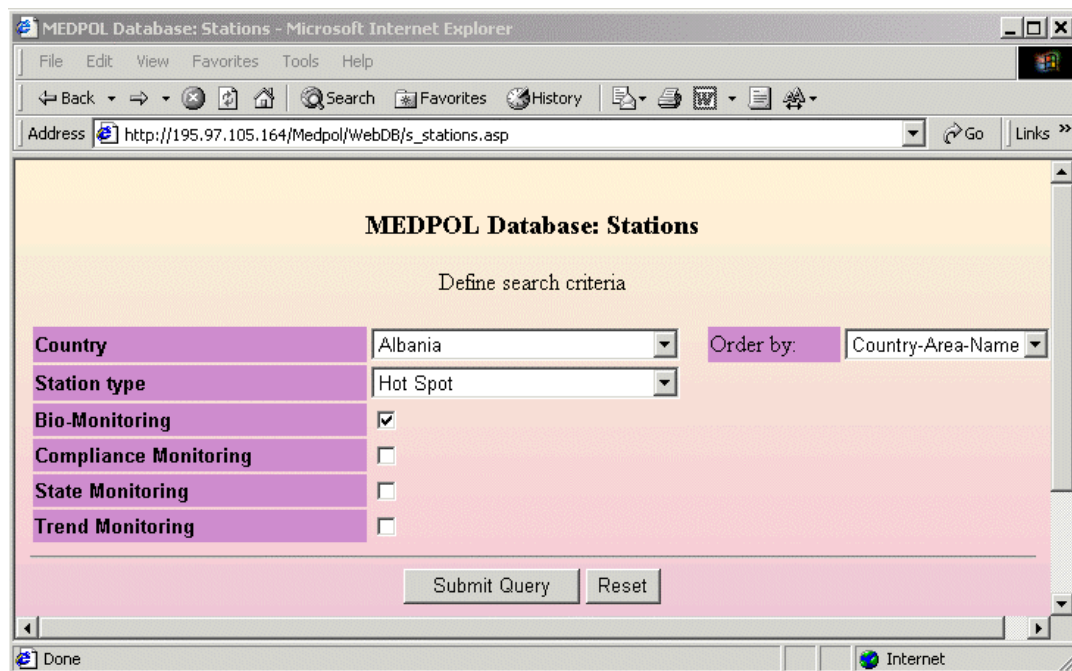
- common mandatory fields - for reporting common characteristics such as laboratory code, station and area code ([download MEDPOL Codes](#)), date and time of sampling, coordinates, etc
- mandatory fields, specific for every data type – for reporting measured values of mandatory monitoring parameters
- optional fields – for reporting measured values of additional monitoring parameters

Reporting format	Download	
BIOTA (TRACE METALS) DATA REPORTING TABLE for MEDPOL Phase III		
BIOTA (ORGANIC CONTAMINANTS) DATA REPORTING TABLE for MEDPOL Phase III		
BIO-MONITORING DATA REPORTING TABLE for MED POL PHASE III		
SEDIMENT (TRACE METALS) DATA REPORTING TABLE for MED POL PHASE III		
SEDIMENT (ORGANIC CONTAMINANTS) DATA REPORTING TABLE for MED POL PHASE III		
LOADS (point sources of pollution) DATA REPORTING TABLE for MED POL PHASE III		
SEA WATER DATA REPORTING TABLE for MED POL PHASE III		
ATMOSPHERIC DRY DEPOSITION DATA REPORTING TABLE for MED POL (III)		
ATMOSPHERIC WET DEPOSITION DATA REPORTING TABLE for MED POL (III)		

- Web page with general thematic maps like all the monitoring stations or load stations etc.



At the bottom of the main Web page user can find links to explore database **stations** and **samples** through dynamic Active Server Pages.



Stations query form contains controls to define criteria for searching stations in the Database. User can select country name and station type, mark type of monitoring, and also select sorting mode. This is similarly done for **Samples** query. Details of the searching alternatives are given in UNEP(DEC)/MED WG.231/Inf.8.

At the current stage of development of the MEDPOL Database, access to real values of measured parameters is not allowed for Internet users however a detailed inventory of stations and samples can be obtained through these links.

What to add more

A downloadable template document for the formulation of new monitoring programmes can be linked to the main page.

A list of reference documents can be provided and this can be directly linked to the library site to download the specified document.

As soon as the character and structure of the possible outputs (graphical presentations, reports etc.) of the Database for end users are clarified, they might be published in the web site.

When to update

In principal the information at the web site regarding **Samples** and **Stations** has to be updated after all the monitoring data - which is annually submitted - is loaded to the database. This can be done in the first half of the year for the data of the previous year.

In addition general information regarding the monitoring programmes will be updated with the inclusion of new country programmes. In other words, immediately after a new programme is finalized and signed by related parties, information at the site will be updated.

III. MED POL Phase I and II Data

Regarding the large databank containing MED POL data from its previous phases, the Secretariat has performed a record-by-record check of all the data and is ready to publish the validated data for its utilization by a large community. However, this procedure took a long time because of the difficulties appeared during the expert evaluation of the data. Finally, the validation of data on biota has been completed and the first evaluation was presented to the national and regional experts during the Review Meeting on MED POL-Phase III Monitoring Activities (Rome, Italy, 5-7 December 2001). The Secretariat has collected the validated databank and an information paper in a CD first to present to the national authorities and later to a wider group of users.

The CD –as attached to this document- contain two public databases on biota; one for the trace metal data and the other one for chlorinated hydrocarbons data and one text file to describe all the technical matters related to the evaluation of these two databases.

Both of the two public databases in the CD cover the validated Phase I and II data of MED POL, hence, do not contain all the raw data submitted to MED POL during the period 1975-1993. In other words, some questionable data were excluded from these public databases and kept in two different databases in MED POL. Both public databases are huge; presenting 10948 records for trace metals and 4027 records for chlorinated hydrocarbons. However,

any kind of data selection can be easily done for further data analysis. The text accompanying the databases in the CD provides technical details on database modifications, analysis of data, techniques applied for the achievement of data quality and selection of questionable data as well as supplementary information regarding different codes used in the databases, participating institute details etc.

The overall work has deeply emphasized the importance of the participation of MED POL designated laboratories in obligatory data quality assurance activities.

IV. Conclusions

Concerning the establishment of the new database of MED POL, Secretariat has put forth the efforts for the finalization of the work and this has been achieved as scheduled. It is now aimed to present the Database capacity and functions more widely and to establish its link to the national/regional experts and scientists. The web site launched for information access to the MED POL Monitoring programmes and the Database will be widely presented to the international community.

It is also considered that MED POL database will be extended to include data on loads from industrial and urban sources, offshore dumping etc. to establish a broader Mediterranean database.

At this stage, it is intended to clarify the terms for accessing information and data by the end users. Besides the limited access to the main database, the full access option can also be suggested. However, considering the complex nature of the database, the type of data stored in the database (environmental data) and the time consuming steps of data validation, it might be convenient to choose for a limited access at present. Therefore, it is proposed that all internet users would be informed about the general information on the monitoring programmes (the first step of access), the availability of validated data in the main database (with an inventory of data) and the possibility of access to the whole data upon official request and confirmation.

Regarding the publication of the validated data from MED POL's previous phases (Phase I and II) in a CD, the Secretariat first wishes to obtain the approval of the national Coordinators. The second version of the CDs will be produced later on and widely distributed to the Mediterranean laboratories/institutes, regional/international experts and environmental organizations etc. It is also planned to prepare a MAP Technical Series Report based on the freely accessible databases covering a full evaluation of the results.