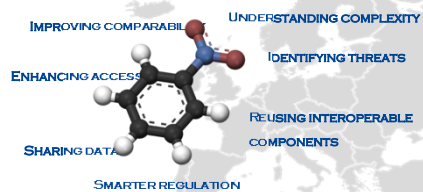


The Information Platform for chemical monitoring - IPChem



Objectives of the meeting

Open the discussion for:

- Possibility to access to chemical data and metadata under EMODnet
- Possibility to publish in IPChem data and metadata on chemical concentrations
- How can we start the collaboration plan next steps



Problem statement

The lack of information on the chemical exposure and burden on the humans and the environment is a major gap in knowledge base for the European chemical policies.

- It is not possible to assess the real impact of chemicals and their mixtures
- It is difficult to assess effectiveness of policies
- Ad-hoc collections are very time demanding and inefficient

Key Policy Question

support improved understanding of the chemical mixtures to which human populations and the natural environment are actually exposed

- *EC Communication: The combination effects of chemicals – Chemical mixtures COM/2012/0252 final)*
- *7th Environment Action Programme. Priority objective 5: to improve the knowledge and evidence base for Union environment policy*



Definition and Objectives

2012: JRC started the design and development of IPChem “Information Platform for chemical monitoring”, under the project coordination of DG ENV (founding the project)

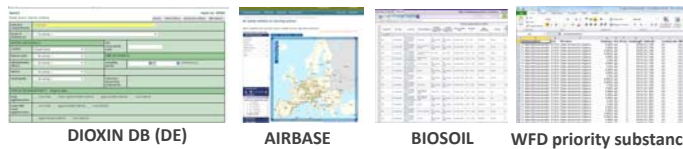
IPChem is
a single access point for discovering and retrieving chemical monitoring data in Europe

- **implementing searching facilities** to discovery, access and retrieve chemical monitoring data
- **Offering hosting facilities** for “orphan” data or data currently not easily accessible
- **Proposing and working on chemical monitoring documentation** (Metadata and data templates) **of defined quality**



And...

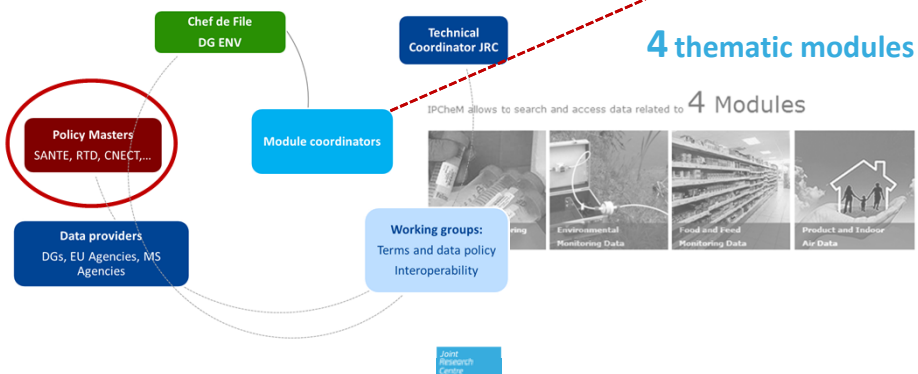
- **It covers only chemical monitoring data;** other data (e.g. hazard, emissions, physicochemical properties) are not integrated to IPChem but can be linked to it
- **Data providers:** Commission Services, EU Agencies, EU Member States, international and national organisations, researchers
- **Users:** Commission Services, EU Agencies, MSs, international and national organisations, researchers and public, respecting existing access and use conditions



Structure

Environmental monitoring data	EEA
Human Biomonitoring	EEA
Food and feed	EFSA
Indoor air and products	IHCP JRC

PROJECT GOVERNANCE



Challenges

- Handle **heterogeneity of data** (formats, web applications, providers, thematic areas)
- Promote data **quality** and data quality documentation
- Improve the data **comparability** (inter and across thematic modules and media)
- Support the response to (already identified) policy questions



WITHOUT REQUIRING (OR MINIMASING) THE SUPPORT (TECHNICAL/PHISICAL/ECONOMIC) OF THE DATA PROVIDERS

Actions

- Design and implementation of a decentralised system
- IPChEM Data Policy Definition and implementation guideline
- Metadata and data content proposal for the 4 thematic modules
- Working group activities to identify policy questions and interoperability solutions and data to be integrated
- Data quality: auto-evaluation questionnaire
- Data quality: Quality checking rules and tools

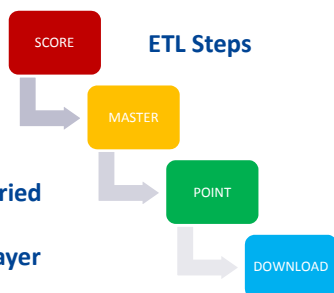
IPChEM RESPONSE



Design solution

IPChem is design as de-centralised system establishing remote access to existing data collections

- no data duplication and information systems replication
- condition/restriction of data access and use defined by Data Providers are always respected



All the transformations to publish the data are carried out by IPChem team
Through the “Extract, Transform and Load” (ETL) layer (Kettle)



Design solution

1ST level: metadata page

Information about data collection, e.g.:

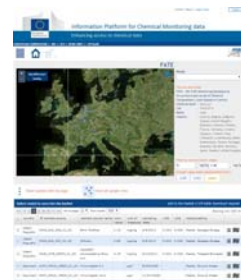
- Spatial and temporal coverage
- media
- Chemicals and related UoM
- Conditions of data access and use
- Responsible Body and PoC
- Links (home page, db app.)

Unique search interface

- Chemical name
- CAS number
- Module
- Media
- Spatial coverage

2ND level: DB Console

- Visualisation of data values (concentrations) into the **Master Table**
- Additional specific attributes and filters based on single data structure
- Sample site/station info
- Temporal trends
- Spatial search and query refinement
- Possibility to save the results into the Basket



Information provided by DP or automatically extracted from the DBs





Software components

IPChEM implementation relies on the following OS Software components

Front End

- Apache
- JQuery
- Backbone.js
- OpenLayers

Back End

- Apache Solr
- Apache Tomcat
- ECAS client (integration in Tomcat)
- Virtuoso Open-Source Triple Store

Data Hosting

- PostgreSQL DBMS

Data Transformation

- DPentaho Kettle



Features



search tools

to discover metadata (FIRST LEVEL) and data (SECOND LEVEL) of the data collections integrated in IPChEM, starting by the name of the substances (in future other identifiers) and spatial coverage, refining by module and media



view metadata tool

to read about the general information about the data collection, to open the data collection web site, if available



DB Console

to view as table the results of the search, to filter the value using specific filter based on data structure, to select data to save into the basket, to show the location site of the sample and discover info about the them, to refine the search by geographical area



Basket tool

to view the result of the search, to compare results of the same data collection or different data collection, to download result as csv choosing the number and type of column, to save/print results as pdf file



news feed (EMM-Medysis):

to discover and read new on chemical, update every 15' and based on MedSys (the Medical Information System developed by JRC-IPSC) who displays those articles with interest to Public Health, grouped by disease or disease type.



Feedback tool

to report bugs, ideas, questions or problem related with the platform and to track solutions,



Map viewer/creator

to access and overlap chemical concentration measurements of 1-n substances in different media, starting by a geographical location; integration of base map layers and thematic map layers to facilitate the interpretation of the results.

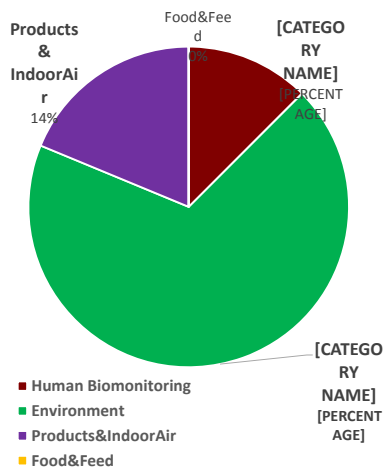
User authentication and access management service
to control access to data with particular restriction from unauthorised





Status of data integration

- Number of current Data Collections: **16**
- Number of Data Collections for September : **21**
- Number of concentration measurements: **21.592.958** across Europe and beyond



Joint Research Centre



Status of information system linkages

- Links with other information systems and services
- Based on CAS nr or the Chemical name:

- News on Media, searching by name,
- Based on EMM-MEDISYS
- Updated every 15'
- Developed in Collaboration with IPSC

ChemAgora Portal

Search results

STRUCTURAL INFORMATION AND PROPERTIES

Chemical Name: cadmium
CAS Number: 7440-43-9
InChIKey: WJZLNKWCSEQC-UHFFFAOYSA-N

Links provided by ECHA

- > eChemPortal
- > REACH - Registered substances

Links provided by ChemAgora

- > CTR
- > PubChem
- > ChemID

- ChemAgora service (XML) customized for IPChem
- Providing a selection of links on Third-party repositories
- Created by IHCP Systems Toxicology

Information Platform for Chemical Monitoring data

Officalr

- Links to BUMA and BUMAC, providing emissions and health relevant thresholds
- Set up in collaboration with IHCP Chemical Assessment and Testing Unit