



ChemXchange

Development of a cost effective management system for exchanging information on products and managing risks of chemicals in the construction industry addressing challenges related to European chemical legislation

Chemical Management – best practice and procedure for safe handling of chemical products



The ChemXchange project aims to fulfill the needs of the construction sector in complying with national and EU chemical legislation, including REACH. FIEC points to research indicating that as many as 88 % of European companies fail to comply with risk prevention regulations regarding substances with known toxicological risks.

The identification and evaluation of relevant European and national legislation is an important element of the ChemXchange project, in order to identify legislation relevant for the definition of content and functionality in the ChemXchange system and to ensure that the solutions meet the specific legislative requirements.

The EU has categorized their approximately 3000 different items of legislation into 32 different subject areas corresponding to the related activities of the European Union. The ChemXchange project has focused especially on EU legislation within the area of “Employment and Social Policy”

and “Environment”. In addition, REACH regulations were especially evaluated in order to ensure that the ChemXchange solution is fully REACH compatible.

EU legislation identified as having direct consequences for the content and/or key functionalities of the ChemXchange system represent important inputs to the specifications of the chemical management system and to the software tool to be developed in the project. In addition, this information provides the basis for establishment of best practice and procedure with regards to safe handling of chemicals in this sector.

The project will prepare a specific report describing EU legislation considered relevant for the handling of chemicals in the building and construction sector, including a compliance table identifying the most relevant legislation and how it is addressed in the ChemXchange project. The report will also include a description of best practice and procedures developed.

The ChemXchange project – Introduction

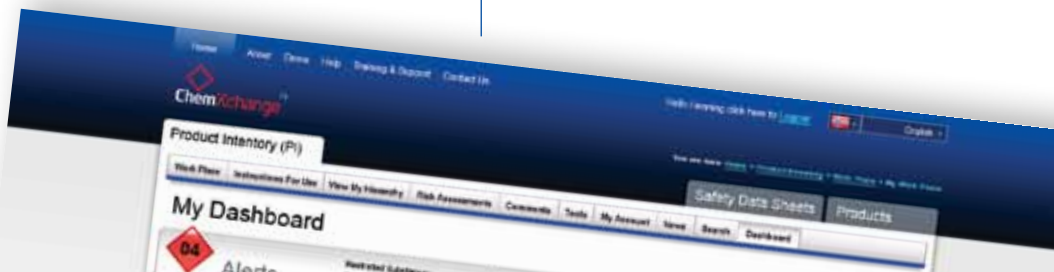
The objective of ChemXchange is to offer the European construction sector a tailor-made, low-priced, fully digitalised system for collecting Safety Data Sheets (SDS) and information on building products. The system will ensure communication up and down the supply chain and effective chemical management, including risk assessment and substitution. The ChemXchange project addresses the challenges in the European construction and building sector and will ensure compliance with existing and new chemical legislation.

It is important to keep in mind that a huge proportion of the European construction sector is made up of small and medium-sized enterprises (SMEs). The sector is Europe's largest industrial employer, and is a major downstream user of chemicals and products containing chemicals. Workers in this sector can be exposed to some of the most dangerous substances in commerce, including those that are harmful, toxic, carcinogenic, mutagenic or harmful to reproduction. It has been estimated that chemical exposure costs the construction industry almost two million cases of illness every year and at least 98 million days of work absences. Associated direct costs are estimated to be nearly €75 billion/year.

Chemical safety in the workplace represents a significant management burden for construction companies and SMEs in particular since many employers lack the necessary knowledge, resources and systems for properly controlled chemical management. ChemXchange aims at eliminating a significant part of this management burden and helping SMEs to avoid possible future financial losses through the development of a common, tailor-made, low-priced construction sector software. The system will provide the industry with tools for collecting technical- and environmental information on building products. All relevant information collected will be compatible with Building Information Modelling.

Hence, the overall objective of the ChemXchange project is to establish a chemical information exchange system that especially fulfils the requirements of SMEs in the building and construction sector.

The total budget is € 3.0 M of which EU funding of € 2.2 M. Starting date 1st January 2009 and the project will be completed 31st of October 2012.



Safety Data Sheets database



The effective communication of risk between the different actors involved in the use of dangerous chemicals, from manufacturer through intermediaries to end user, is crucial for the prevention of hazards and risks. The Safety Data Sheet (SDS) is the most important tool for supplying downstream chemical users with essential information regarding health, environment and safety (HES) risks and risk management. The SDS contains essential background information enabling companies to perform legally required chemical risk assessment and management. Poor quality SDSs are

reported to be a major problem throughout Europe. Various studies show that between 50% and 65 % of all delivered SDSs fail to pass quality control. Experience from Norway shows that construction SMEs have major problems complying with SDS requirements and as many as 69% of construction companies were instructed by authorities to comply with regulations. Practical problems include lack of delivery, different formats and different supplier distribution procedures.

In order to address these issues related to Safety Data Sheets and the lack of reliable information regarding chemicals in the workplace, the ChemXchange project will develop a common platform integrating all relevant chemical information primarily dominated by Safety Data Sheets. Key functionalities will include:

- Facilitating import of SDS from the chemical supplier and an interface with software solutions for preparation of Safety Data Sheets.
- Exposure scenarios
- Translation of SDS information between different languages
- Tools for electronic chemical information exchange up and down the supply chain
- Multi- accessible and searchable safety data sheet (SDS) database with SDS raw data (XML-format)
- Tool for logging and informing on quality assurance of SDS

Management System for safe handling of chemicals

In the early phase of the ChemXchange project, a survey coordinated by EBA, FIEC, UNIEP and GCI-UICP was conducted. The survey included a web-based questionnaire and interviews were performed in order to identify:

- end-user needs, especially with regards to content and information and key functionalities of a chemical information system
- current obstacles for lack of regulatory compliance
- today's formats and practices for exchange of chemical information as well as chemical supplier practices, needs and specific requirements
- currently available software tools for a chemical management system.

In addition, a web based survey and interviews are performed involving the suppliers of chemical products.



The project wants to express its gratitude to the enterprises which participated in our study and who generously provided important input and information to the project.

Based on the identification of relevant EU legislation and the user surveys, further specification of the ChemXchange IT management system for purchase and safe handling of chemicals were developed focusing on content and functionalities. Requirements in order to ensure safe use, correct waste handling and correct procedures in abnormal situations/accidents have been focused on.

Key content and functionalities:

- Safety Data Sheets (from the SDS database)
- Exposure scenarios (from the SDS database)
- Company profile and hierarchy (workplace structure)
- Register of chemical products used
- General workplace information and workplace waste plan
- Generate specific instructions/procedures for use of chemicals
- Risk assessment and sub-station
- Generate filters (list of prohibited and unwanted substances/products) and compare chemical register with filters
- Provide transfer of information and ensure transfer of knowledge
- Exposure and health surveillance register
- Generate reports/provide historic data and archives

Management system for products / building articles

The construction industry is very complex with a lot of companies working together. It is therefore somewhat difficult to establish what kind of products have actually been used. Knowledge of whether products and elements meet appropriate technical and environmental requirements is difficult to acquire. To be aware of the national regulations on technical objectives (technical specifications for products) and to collect environmental data is by no means an easy task. As the industry moves forward, it should be possible to incorporate all information into a Building Information Model (BIM).

The IT-tool developed will make it easy to collect relevant product information from all partners in the project. Depending on how the project is organized, the system

will make it easy to get product information from any company delivering services or products. It is possible to set up the system to collect product information automatically when purchasing electronically. Then you can start collecting SDS and information on products when purchasing.

The ChemXchange project is tailor-made for the construction Industry, but can also be used in other industries. It seeks to address the problem of knowing whether a product meets technical and environmental criteria. To be able to meet all these demands the ChemXchange project is developing a software system that helps the industry to collect product information on all types of products. The system will help SMEs in their task of collecting information on products which meet national regulations.



Environmental information on products

With the system you will be able to collect every type of data such as energy used for producing, carbon footprint, waste codes, %recycled materials, emissions, chemicals, etc. Information like green labeling, Environmental product declaration (EPD) can easily be attached and given to the user. Users can create their own settings at company or project level, and detect if any product meets user requirements.



Technical information on products

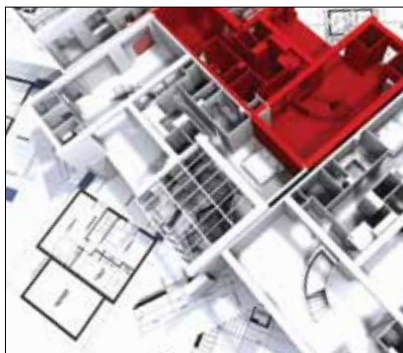
Given the new “construction products directive” stating that construction products may only be placed on the market if they are fit for their intended use. Today it is difficult to know whether products meet EU and national requirements. To be able to collect all types of technical data the software system will provide flexibility in the collection of such data. You can easily attach any type of document such as installation guides, certificates, warranty certificates, etc.



Information built for BIM thinking

Building Information Modeling (BIM) is a new approach to design, construction, and facility management in which a digital representation of the building process is used to facilitate the exchange and interoperability of information in digital format. BIM is beginning to change the way buildings look, the way they function, and the ways in which they are designed and built.

The IFD Library provides flexibility for an IFC-based building information model (BIM) allowing for the link between the model and various databases with project and product specific data. By using an IFD Library as a



basis for all types of technical or environmental product data, you will be able to enrich any BIM model with data for Facility Management etc.

The ChemXchange project is a co-operation between:

Norwegian Contractor's Association (EBA) is Coordinator.



FIEC, UNIEP, GCI-UICP and Skanska ensure that the requirements of the constructions sector are assigned a significant degree of focus and that they represent an important and highly effective vehicle for dissemination of the results from the ChemXchange project.



Research and technology development is performed by Teknologisk Institutt AS (Norway), Interconsult Bulgaria OOD (Bulgaria), Kaunas University (Lithuania) and Labor (Italy).



ICB | SOFTWARE & CONSULTING



Contact details:

For further information and update
on project progress and results:

www.chemxchange.com

or

Project coordinator; Berit Bull Gjertsen, EBA, tel +47 23087500

Technical Manager; Lars Fredenlund, CoBuilder, tel +47 67 51 61 00



coBuilder
THE CONSTRUCTION MARKETPLACE

The ChemXchange project is financially supported through EU –
“the Funding Scheme in FP7 “Research for SME Associations” (FP7-SME-2007-2)”

