Available online at www.sciencedirect.com
ScienceDirect
Regulatory Toxicology and Pharmacology 49 (2007) 208–216
Regulatory Toxicology and Pharmacology
www.elsevier.com/locate/yrtph

# Database search for safety information on cosmetic ingredients

Marleen Pauwels *, Vera Rogiers

*Department of Toxicology, Dermato-Cosmetology and Pharmacognosy, Vrije Universiteit Brussel (VUB), Laarbeeklaan 103, B-1090 Brussels, Belgium*

Received 14 May 2007
Available online 30 August 2007

**Abstract**

Ethical considerations with respect to experimental animal use and regulatory testing are worldwide under heavy discussion and are, in certain cases, taken up in legislative measures. The most explicit example is the European cosmetic legislation, establishing a testing ban on finished cosmetic products since 11 September 2004 and enforcing that the safety of a cosmetic product is assessed by taking into consideration "*the general toxicological profile of the ingredients, their chemical structure and their level of exposure*" (OJ L151, 32–37, 23 June 1993; OJ L066, 26–35, 11 March 2003). Therefore the availability of referenced and reliable information on cosmetic ingredients becomes a dire necessity.

Given the high-speed progress of the World Wide Web services and the concurrent drastic increase in free access to information, identification of relevant data sources and evaluation of the scientific value and quality of the retrieved data, are crucial.

Based upon own practical experience, a survey is put together of freely and commercially available data sources with their individual description, field of application, benefits and drawbacks. It should be mentioned that the search strategies described are equally useful as a starting point for any quest for safety data on chemicals or chemical-related substances in general.


*Keywords:* Cosmetics; Toxicological data; Risk assessment; Hazard (identification); Databases; Dangerous substances; Safety evaluation; Regulatory toxicology; EU legislation

## 1. Introduction

Availability and quality of safety data on cosmetic ingredients strongly differ from one compound to another. This can be partly explained by the provisions of the European Cosmetic Products Directive (EU, 1976a), which do not impose toxicological testing on a cosmetic ingredient unless it is taken up in one of the Directive's Annexes. This means that, for the majority of cosmetic ingredients, data availability will depend on extra-EU requirements, tests performed on a voluntary basis and/or whether the compound has been subject to other data-generating EU Directives. Consequently, knowledge of the different types of product-specific legislations is quite important when looking for cosmetic safety data in the current literature or on the World Wide Web.

In practice, potentially relevant safety data for cosmetic ingredients usually are a combination of:

- the standard toxicological data package available for chemical substances, typically consisting of $LD_{50}$-values (lethal dose 50%), irritation and sensitization data, No Observable Adverse Effects Level (NOAEL) values out of repeated dose toxicity studies, results of mutagenicity, carcinogenicity and/or reproductive toxicity studies, etc.;
- additional relevant data including official classifications and industrial threshold limit values, data on analogous substances, relevant data in the public literature, etc.

Besides official documents and websites at the EU and non-EU level, free and commercial databases and websites all over the world have proven to be storehouses of information. As the number of data sources containing safety data is very diverse, they need to be compiled in a

* Corresponding author. Fax: +32 2 477 45 82.
*E-mail address:* Marleen.Pauwels@vub.ac.be (M. Pauwels).

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doi:10.1016/j.yrtph.2007.08.007

structured overview in order to obtain, within a limited time frame, the key information that exists on a particular cosmetic ingredient.

In addition, a general and realistic overview of the usefulness of the available data sources and points of strength and weaknesses, forms the basis of a good search, followed by a scientific evaluation of the quality of the obtained information.

Our own experience in safety assessment of cosmetics will be the guide through the quest for safety data in practice and the judgment of their quality and relevance.

Although the focus of this paper clearly resides on the search for human toxicity data, the same channels as those mentioned hereunder may equally be explored to search for physico-chemical and/or ecotoxicological data.

## 2. Useful data sources

### 2.1. Types of data sources

Relevant information can be extracted from worldwide official instances' websites, industry-governed websites and freely available and commercial databases. As far as the latter are concerned, it is important to distinguish between **bibliographical** databases containing citations from extended lists of periodicals, journals, books, etc., and **factual** databases containing the actual data on a specific subject. Most interesting for our purpose are factual databases comprising fields with physico-chemical, toxicological and/or ecotoxicological data, by preference accompanied by plain references. Companies such as the Scientific and Technical Network (STN®)[1] and Thomson Dialog Datastar[2] commercialize sets of bibliographical and factual databases by selling CD-ROMs and/or allowing registered users to consult the databases through the Internet.

### 2.2. Free information sources on the internet

**Google™,[3] Yahoo!®[4] and MSN Search[5]**

Coverage: the World Wide Web, generating lists of Internet links that match the entered keyword(s).

Comment:
- the number of hits gives a general idea on the amount of available data.
- reliability of data cannot be guaranteed.

**EUR-Lex[6]**

Coverage: European treaties, legislation, case-law and legislative proposals,[7] including consolidated versions[8] of EU Directives.

Comment: without the correct search items (literal wording in the legislative texts), it may be unexpectedly hard to retrieve existing information.

**Directorate General (DG) Enterprise, cosmetic section[9]**

Coverage: existing and upcoming cosmetic-related legislation, [10] discussions on legislative aspects and many useful links.

Comment: the website has significantly improved over the past years and has become a key tool to follow up the EU cosmetic legislation.

**Directorate General Health and Consumer Protection (DG SANCO)[11]**

Coverage: overview of EU laws on safety of food and other products, on consumers' rights and on the protection of people's health, including links to individual opinions of scientific committees such as the Scientific Committee on Consumer Products (SCCP), previously called Scientific Committee on Cosmetic products and Non-Food Products intended for consumers (SCCNFP).[12,13]

Comment: an information source of major importance due to the presence of the SCC(NF)P opinions; the website's practical search value is impaired by the fact that cosmetic ingredients are not necessarily designated by their INCI[14] names.

**European Chemicals Bureau (ECB)[15]**

Coverage: wide range of information related to the EU risk assessment procedures of dangerous substances and preparations, with direct links to consolidated pieces of legislation in the chemi-

[1] http://www.stn-international.de/ (consulted July 2007).
[2] http://www.dialog.com/products/datastar/(consulted July 2007).
[3] http://www.google.be/ (consulted July 2007).
[4] http://www.yahoo.com/ (consulted July 2007).
[5] http://www.msn.com/ (consulted July 2007).
[6] http://europa.eu.int/eur-lex/ (consulted July 2007).
[7] http://europa.eu.int/eur-lex/lex/RECH_menu.do?ihmlang=en (consulted July 2007).
[8] http://europa.eu.int/eur-lex/accessible/en/consleg/index1.html (consulted July 2007).
[9] http://ec.europa.eu/enterprise/cosmetics/index_en.htm(consulted July 2007).
[10] http://ec.europa.eu/enterprise/cosmetics/html/cosm_ongoing_init.htm (consulted July 2007).
[11] http://ec.europa.eu/dgs/health_consumer/index_en.htm (consulted July 2007).
[12] http://ec.europa.eu/health/ph_risk/committees/04_sccp/sccp_opinions_en.htm (consulted July 2007).
[13] http://ec.europa.eu/health/ph_risk/committees/sccp/sccp_opinions_en.htm (consulted July 2007).
[14] *International Nomenclature of Cosmetic Ingredients*.
[15] http://ecb.jrc.it/ (consulted July 2007).