

FRIDGE

Chemicals Sector Summit

Preparation:

Information System Strategy (Step 4)

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REVISED FINAL DRAFT



**KAISER
ASSOCIATES**

**ECONOMIC
DEVELOPMENT
PRACTICE**

Leadership House 40 Shortmarket Street
Cape Town 8000 South Africa
tel +27 21 481 6000 fax +27 21 481 6001
www.kaiseredp.com

CAPE TOWN • LONDON
NEW DELHI • SÃO PAULO
DUBAI • WASHINGTON

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EXECUTIVE SUMMARY

In preparation for the Chemicals Sector Summit in 2005, FRIDGE commissioned assistance in evaluating the necessity to expand the existing information system in the chemicals sector, and in devising an appropriate development strategy to address any gaps.

The diverse range of stakeholders in the chemicals industry have a wide range of different information requirements ranging from market and trade issues, technical information such as academic papers or Health, Safety & Environmental (H,S&E) guidelines, and personal interest information such as employment opportunities or chemistry in daily life. The objective was to ensure that stakeholders' information requirements are met by increasing the information available to stakeholders both inside and outside the chemicals sector by means of a portal-type website. A web portal is a type of website that provides a tailored 'gateway' to the internet. It provides access to resources (including original content and content from third-party providers) as well as a range of features such as news bulletins or a search engine.

The Chemweb and the Chemissa websites form the backbone of the current information system for the chemicals sector in South Africa. These will be merged into one website in the future. In addition, ChemSource – a CD-ROM based database – provides information on suppliers in the chemicals industry. There may be an opportunity to integrate the data into the Chemweb/Chemissa website when merged.

Overall, there is good provision of links to information by the Chemweb website and detailed statistics by the Chemissa website; however, these sites currently fall short of providing a comprehensive information system. The main gaps in information provision that have been identified in this study include:

- ▶ Lack of current links to international websites that provide international market information
- ▶ Information on chemicals research and technology in South Africa and internationally
- ▶ Government initiatives and support for the chemicals sector in South Africa
- ▶ Information relating to hazards and environmental issues internationally, for example, initiatives such as Responsible Care

Further, the structure of the current website requires improvements in order to enable users to navigate the site and find relevant information more easily and quickly.

There are two main approaches to filling these information gaps: linking to other sites that provide relevant content, and/or developing new original content for the portal site. The table below provides a summary of recommendations on websites to which the portal site can be linked, and areas where original content development is required.

	Information required	Recommendation
Sector Overview	Information on international sub-sector and end use markets	Link to sector organisation sites including: Plastics Council, World Chlorine Council, European Council of Vinyl Manufacturers
Country overview	Market overviews for potential export markets	Link to country profiles for all countries provided by the CIA
Production	Information on international chemicals production	Link to production information for the EU and international comparisons provided on CEFIC Develop similar information for the South African market
Trends	Global trends in the chemicals sector	Link to trends detailed on the American Chemical Society website

	Information required	Recommendation
Trade	Trade agreement information	Link to sites on trade agreements, including Generalised System of Preferences, Southern African Customs Union on the Department of Foreign Affairs site, COMESA website, SADC Trade, Industry and Investment Review 2004, AGOA
	Trade issues	Link to CEFIC Position papers page (Links could be made directly to specific articles relating to key trade issues)
	International trade in chemicals products	Link to specific sections of the trade data offered by the dti Link to Austrade's search page for export information by category and target country Link to US Trade information
Employment	Employment in the chemicals sector in South Africa	Link to employment statistics on CEFIC Link to pages providing information on trade unions, including CEPWAWU Link to the Department of Labour
Health and safety indicators	Health and safety indicators for South Africa and other countries	Link to OECD Chemicals safety site for South Africa
Academic	Further links to academic resources relating to chemicals research	Link to sites offering free searches of chemicals journals and article abstracts
Training/Skills	Information on skills available	Link to CHIETA, and in future link to skills database on CHIETA website once this has been developed Link to sites offering networking opportunities
	Further links relating to educational matters	Link to pages offering educational material on chemicals
Current Issues	More recent material on issues facing the chemicals sector	Develop more recent South Africa-specific articles with input from industry experts
News	Links to news websites relating to the chemicals sector	Link to sites offering news articles, and journal articles, e.g. www.chemicalmarketreporter.com , trade publications on www.chemindustry.com
Events	Links to relevant organisations required	Contact relevant organisations, e.g. Department of Science and Technology, to ascertain event schedules and post dates on website Link to expo information on www.chemnet.com for expos worldwide, e.g. ChemSpec Europe 2005, ChemSource 2005
Tenders	Details on tenders in the chemicals sector in South Africa	Link to tenders on Engineering News and Tradeworld Link to government gazette tenders
Chemistry in daily life	Chemistry information for people outside the chemicals sector	Link to information on chemicals uses and products pitched at a level that is widely understandable
Physical processes/ Chemical reactions	Information on physical processes used in the manufacture of chemicals	Link to sites detailing physical processes and chemical reactions at levels that are accessible for both people inside and outside the industry

	Information required	Recommendation
Relevant legislation	Links to applicable legislation	<p>Link to legislation relating to:</p> <ul style="list-style-type: none"> ▶ Agricultural Produce Agents ▶ Agricultural Product Standards ▶ Marketing of Agricultural Products ▶ Basic Conditions of Employment ▶ Labour Relations ▶ Companies ▶ Compensation for Occupational Injuries and Diseases ▶ National Health ▶ Occupational Diseases in Mines and Works ▶ Disaster Management ▶ Engineering Profession ▶ Natural Scientific Professions ▶ Environment Conservation ▶ Environmental Laws Rationalisation ▶ National Environmental Management ▶ Biodiversity ▶ Explosives ▶ Patents and Intellectual Property Laws ▶ Mineral and Petroleum Resources Development ▶ Petroleum Pipelines ▶ Petroleum Products ▶ National Research Foundation ▶ Pharmaceuticals ▶ Fertilisers, Farm Feeds, Agricultural and Stock Remedies
Incentive and support entities	More direct links to entities	Link directly to incentives offered and support entities, including Small Business Development, Technology Transfer Guarantee Fund, SPII Fund, National Research Foundation, Department of Science and Technology, Innovation Fund, The Enterprise Office (TEO), Industrial Development Corporation, National Treasury, Technology for Women in Business (TWIB)
Research and innovation	Information on R&D expenditure in South Africa and other countries	Link to South African National Survey of Research and Experimental Development 2001/02
	Additional sources of information	Link to the Innovation Hub
Hazards	Further links providing information relating to chemical hazards	Provide company Material Safety sheets on website Link to UNEP chemicals programme page, UNITAR Chemicals & Waste, Basel Convention, INFOCAP, IPCS, Intergovernmental Forum on Chemical Safety, Green Institute
International Initiatives	Information on the Responsible Care Initiative	Link to Responsible Care information at CEFIC. American Chemistry Council (ACC), FECC, The Chemical Industry site, ICCA, CAIA, and Canada Chemicals Producers Association page.
	Information on the High Production Volumes Initiative	Link to information on the High Production Volume (HPV) Chemicals Initiative
	Information on the Long range research initiative	Link to information on the long-range Research Initiative at ICCA, CEFIC, ACC, JCIA
Sustainable Development	Further information on sustainable development	Link to Chemicals and the Environment on the EU site, United Nations framework on climate change, etc.

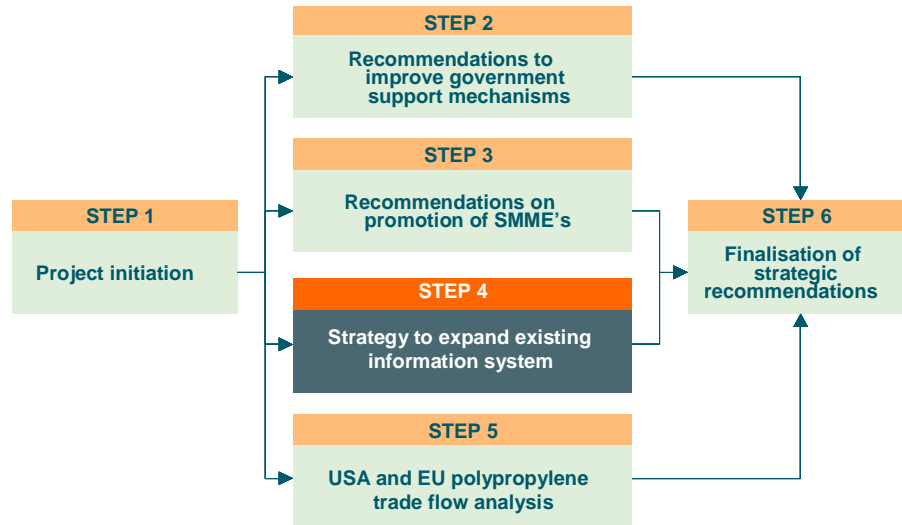
	Information required	Recommendation
Consumer confidence and safety	Further information on consumer health and safety	Link to US Food and Drug Administration, EU site on consumer safety with relation to chemicals
Industry organisations	Links to international industry organisations	Link to: <ul style="list-style-type: none"> ▶ International Council of Chemical Associations ▶ American Chemical Society ▶ Society of the Plastics Industry (United States) ▶ Canada's Chemicals Producers ▶ Japan Chemical Industry Association ▶ National Industrial Chemicals Notification and Assessment Scheme (NICNAS) ▶ Plastics and Chemicals Industry Association Australia ▶ New Zealand Institute of Chemistry

These recommendations form the basis from which to develop an ongoing improvement programme for the portal site. Initially, the website structure should be improved, the list of links suggested in this document should be finalised and incorporated into the website, and where new material has been recommended, this should be developed. On an ongoing basis, the website should be regularly assessed and updated, and new material should be incorporated as it becomes available.

As the Chemicals Sector Summit considers expanding the information system it should follow best practices in website management. The content of linked website should be assessed according to its authority, currency, accuracy, relevance, objectivity, comprehensiveness and coverage. Website format should be assessed according to design and layout, presentation and copyright and cost issues. The content and format of the portal site should be kept up-to-date and the site should be promoted to current and potential users to increase awareness and drive traffic to the site. User surveys and traffic measurement should therefore be used to assess the effectiveness of the website.

1 Introduction to the document

As part of the FRIDGE study in preparation for the Chemicals Sector Summit, research has been commissioned into various aspects of the chemicals sector in South Africa. This document details the output of Step 4 of the project, the development of a strategy to expand the existing information system.



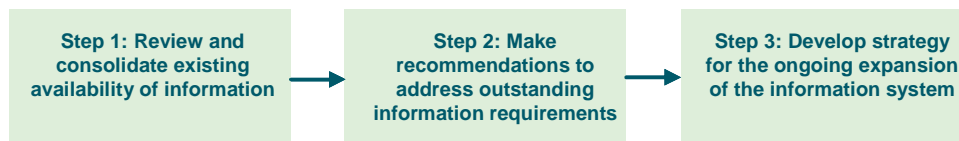
The key objective which motivated this step was to increase the information available to stakeholders both inside and outside the chemicals industry, by means of a portal-type website. A web portal is a type of website that provides a tailored 'gateway' to the internet. It provides access to resources (including original content and content from third-party providers) as well as a range of features such as news bulletins or a search engine. This step therefore aimed to develop strategic recommendations for achieving this in a relevant and useful way.

The key objectives of this work stream were therefore to:

- ▶ Review and assess the available sources of information in the chemicals sector
- ▶ Develop recommendations to expand the information system
- ▶ Develop a strategy for the ongoing expansion of the information system

2 Methodology

The methodology that was used is detailed further below:



2.1 Step 1: Review and consolidate available information

The sources of information that were reviewed as constituting the available South African information system were:

- ▶ Chemweb/ Chemissa:

The dti and the CSIR developed the Chemweb and the Chemissa sites to provide information to the chemicals sector. They will be merged into one website in the future.

 - Chemweb was originally developed as a specialised portal for the chemicals industry in South Africa to provide information relevant to companies operating in the sector, including news, current issues facing the sector such as environmental issues, and overviews of the chemical sector. It also provides links to relevant sites.
 - Chemissa was originally a subscription website which provided detailed and up to date information regarding production, consumption and trade of chemicals in the SADC countries.

In the review below Chemweb and Chemissa were assessed as two different websites as at the time of the project they had not yet been merged.

- ▶ ChemSource:

ChemSource is a CD-ROM which contains a database of suppliers in the chemicals sector. It may be discontinued as a CD-ROM for purchase, and there may be an opportunity to integrate the data into the Chemweb/Chemissa website.

Available information on best-in-class international sites and feedback from the Counterpart Group was consolidated and a list of content areas was drawn from this review. This provided a benchmark against which the provision of information by Chemweb and Chemissa could be measured and allowed information categories that are not available from these sites to be identified.

The sources of information were also reviewed according to user friendliness and design, as this affects the usage rate of the website and therefore access to information. This was only done for Chemweb, as this is the basis for the newly merged website.

2.2 Step 2: Address outstanding informational requirements

As part of this step an extensive review of national and international websites was conducted. These websites were compiled from:

- ▶ A comprehensive search of the World Wide Web for chemicals related websites
- ▶ Websites referenced in articles of interest
- ▶ Recommendations from the Counterpart Group

Further, sources of information were investigated and consolidated for the subjects of:

- ▶ Hazards in chemical production in South Africa
- ▶ Hazards in chemical use in South Africa
- ▶ Legislation applicable to the chemicals sector
- ▶ International chemical initiatives including:
 - Environmental initiatives e.g. Responsible Care initiative
 - Health and safety initiatives e.g. the HPV initiative
 - Trade initiatives

Websites covering these issues were reviewed in terms of the content they provide, in order to assess the relevance of the information provided to the chemicals sector in South Africa.

For a detailed list of these websites see Appendices 1 and 2. In addition, these were evaluated using against a number of criteria, including:

- ▶ Content criteria
 - Authority
 - Currency
 - Accuracy
 - Relevance
 - Objectivity
 - Comprehensiveness
 - Coverage
- ▶ Format criteria
 - Design
 - Layout
 - Presentation

Further, recommendations were provided for addressing outstanding informational requirements by either linking to relevant websites where these are available, or by developing original content for inclusion in the website.

2.3 Step 3: Develop strategy for the ongoing expansion of the information system

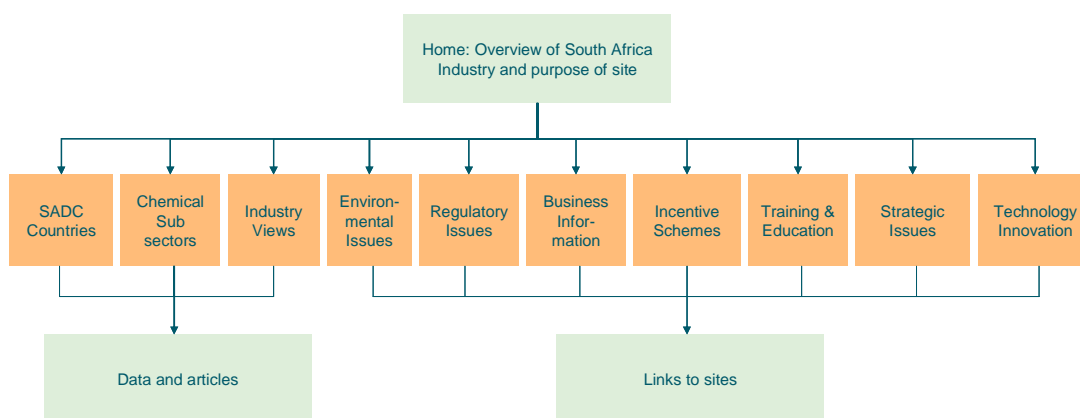
This included a review of best practice in website management, involving the strategic approach to selecting sites for links and maintaining content that is up-to-date and relevant. The outcomes of this were detailed in section 5.

In this step, best practice was determined from reviewing international guidelines on website management.

3 Overview of current information system

Chemweb/Chemissa and Chemsources were assessed to determine the extent of coverage of topics and access to further sources of information which they provide to users. These websites were selected because they constitute the most comprehensive sources of information in the chemical sector in South Africa. As such, they would be the starting point for expanding the information system available by means of a portal site, as confirmed by the Counterpart Group.

The current Chemweb site structure is shown in the diagram below:



Content of websites

Key strengths and weaknesses in information provision are discussed below for each category of information. Overall, there is a lack of links to international websites which may provide useful information relating to international market information, information on chemicals research and technology, government initiatives and support, and information relating to hazards and environmental issues, for example initiatives such as Responsible Care. (The table in section 3.1 below shows the following findings in more detail.)

Market information

- ▶ There is sufficient market information provided on South Africa and the SADC countries, although statistics relating to employment, R&D expenditure, and health and safety indicators are lacking
- ▶ There is insufficient information on international chemicals markets and market trends

Academic Resources

- ▶ The site links to the Chemicals Abstract Service, which provides a comprehensive international database of journals and patent literature

Careers and training

- ▶ Extensive links are provided to recruitment agencies, both general and chemical-specific, e.g. the Sasol careers page
- ▶ Extensive links are also provided to educational organisations and services
- ▶ Links are provided to education and training policy
- ▶ There is no specific information on skills available to the chemicals sector

Current events

- ▶ While articles on issues of concern are provided and links are provided to news sites, these articles are not up-to-date
- ▶ There is no information on current tenders

Companies

- ▶ ChemSource provides a comprehensive list of chemicals industry suppliers and manufacturers in South Africa. This is not currently available online.
- ▶ International suppliers can be identified through chemical industry search engines

Chemistry

- ▶ There is little information on chemical processes and reactions
- ▶ There is little information on uses for chemical products

Legislation and regulation

- ▶ Links on regulation and legislation relating to environmental issues, competition issues, and chemicals weapons and warfare are provided
- ▶ Links to patenting issues are comprehensive
- ▶ There are no links to legislation on labour issues, petroleum, disaster management, health, and industry specific legislation such as the Pharmacies Act

Institutional support

- ▶ Links to incentive providing entities are provided
- ▶ Links to Science and Technology institutions and departments are comprehensive

Research and Innovation

- ▶ There is little information on research and innovation, with the only link under this category leading to the National R&D Strategy

Health, Safety and Environment

- ▶ Conventions, declarations and protocols affecting the chemicals industry are provided
- ▶ Information on international initiatives such as the Long Range Research initiative and Responsible Care is lacking
- ▶ There is insufficient information on consumer safety

Format of information

The Chemweb site has been briefly assessed according to its design and layout, presentation, and accessibility, and it was found that the Chemweb site is well designed with easy to use navigational aids. The design of the website is aesthetically pleasing, with good use of graphics, colours, and font sizes. The website format could however be improved by:

- ▶ A site map page
- ▶ A more extensive search function
- ▶ Popup windows to explain contents of toolbar items
- ▶ Interactive features (in addition to a contact facility) such as forums, bulletin boards and email alerts could be used to attract more traffic to the site
- ▶ Grouping links at a lower level, and where links relate to more than one category of information these should be duplicated

(The table in section 3.2 below shows the findings in more detail.)

3.1 Assessment of content of websites

Content of website		Chemweb	Chemissa	ChemSource	Information gap
Market information	Sector overview	<p>✓</p> <p>Overviews for various sectors, including:</p> <ul style="list-style-type: none"> ▶ Exports and imports for SADC countries ▶ Share of major countries of total exports and imports ▶ Total production of SADC countries ▶ Share of total production of major producing countries ▶ Total consumption of SADC countries ▶ Share of consumption by major consuming countries 	<p>✓</p> <p>Major products listed for 14 SADC countries</p>		Sector information for international markets
	Country overview	<p>✓</p> <p>Brief overview for SADC countries giving:</p> <ul style="list-style-type: none"> ▶ Major economic activities and exports ▶ GDP ▶ Share of SADC GDP 	<p>✓</p> <p>Including for 14 SADC countries:</p> <ul style="list-style-type: none"> ▶ Demographic overview ▶ Industry composition ▶ Trends in inflation and interest rates ▶ GDP performance ▶ Trade balance 		Country overviews for potential export markets
	Production	<p>✓</p> <p>High level information for SADC countries on total production and share of major products in production</p>	<p>✓</p> <ul style="list-style-type: none"> ▶ Production in 14 SADC countries for 11 subsectors ▶ Consumption of raw materials for 11 subsectors in 14 SADC countries 		Production of chemicals in potential export markets

Content of website		Chemweb	Chemissa	ChemSource	Information gap
	Demand	✓ High level information for SADC countries on: ▶ Estimated total demand ▶ Share of major products in demand	✓ ▶ Consumption in 14 SADC countries for 11 subsectors ▶ Consumption of chemicals in end-use sectors for South Africa		Demand information for potential export markets and markets other than SADC
	Trends		✓ For SADC countries		Global market trends in the chemicals sector
	Trade	✓ High level information for SADC countries on: ▶ Total exports and imports ▶ Share of major import and export products	✓ Total SADC exports and imports for: ▶ 11 sub sectors ▶ 14 SADC countries ▶ Major products in each subsector based on HS codes		Non-SADC trade of chemicals products
	Employment				Employment issues and statistics in the chemicals sector in South Africa
	Health and safety indicators				Health and safety indicators for South Africa and other countries
Resources	Academic	✓ Link to chemicals abstract service			Further links to academic resources relating to chemicals research
Careers	Training	✓ Links to educational organisations, services and to legislation and policy relating to education Also includes links to educational material			Further links to information on available skills

Content of website		Chemweb	Chemissa	ChemSource	Information gap
	Careers and recruitment	✓ Links to career advice sites and recruitment agencies			
Current events	Current issues	✓ Overviews of current issues from industry experts, currently covering <ul style="list-style-type: none"> ▶ Development of the downstream chemicals sector in South Africa ▶ An overview of the sector in South Africa ▶ Production of fine chemicals in South Africa ▶ Health, Safety and Environmental issues The most recent article however dates from 2002			More recent material on issues facing the chemicals sector – this would require regular updating
	News	✓ Links to general and sector publications			Links to news websites relating to the chemicals sector
	Events	✓ Links to information on upcoming conferences			Information on other events
	Tenders				Details on tenders in the chemicals sector in South Africa
Companies	Suppliers	✓ <ul style="list-style-type: none"> ▶ Links to companies providing chemical engineering services ▶ Links to search engines to identify international companies 		✓ Details of suppliers to the chemicals industry	Information on BEE companies

Content of website		Chemweb	Chemissa	ChemSource	Information gap
	Manufacturers	✓ ▶ Links to major manufacturers in 12 sub sectors ▶ Links to search engines to identify international companies	✓ Major role players in 14 SADC countries listed	✓ Details of chemicals manufacturers/suppliers	
	Distribution	✓ Links to search engines to identify international companies	✓ Major role players in 14 SADC countries listed		
Chemistry	Chemistry in daily life				Chemistry information for people outside the chemicals sector
	Physical processes				Information on physical processes used in the manufacture of chemicals
	Chemical reactions				Information on reactions used in the manufacture of chemicals
	Product information		✓ Major products listed for 14 SADC countries		More comprehensive product information
Legislation and regulation	Patents	✓ Links to relevant sites both national and international			Links to relevant government legislation
	Weapons and warfare	✓ Links to government position articles			
	Competition issues	✓ Links to relevant sites			

Content of website		Chemweb	Chemissa	ChemSource	Information gap
	OH, S & E	✓ Environmental Management Occupational health and safety			
Institutional support	Incentive entities	✓ Links to: ▶ The dti website ▶ Investment incentives at www.safrika.info ▶ IDC site			More direct links for sites that provide incentives to the chemicals sector
	Incubators	✓ Link to Chemin incubator			
	Science and Technology Institutions	✓ ▶ Links to SADC Universities' chemicals departments ▶ Links to SA Technikons' chemicals departments ▶ Links to Scientific organisations, including Chemin, CSIR			Links to Science and Technology Institutions
Research and innovation	R&D expenditure				R&D expenditure in South Africa and other countries
	Other information	✓ Link to the National R&D Strategy			
Health, Safety & Environment	Long range research initiative				Links to relevant sites required
	Hazards/Sustainable Develop-	✓ Link to hazardous chemicals database			

Content of website	ment	Chemweb	Chemissa	ChemSource	Information gap
		<p>✓</p> <p>Links to relevant sites on: International conventions and declarations and protocols</p> <ul style="list-style-type: none"> ▶ Bahia Declaration ▶ Basel Convention ▶ Cartagena Protocol ▶ Kyoto Protocol ▶ Montreal Protocol ▶ Stockholm Convention ▶ Rotterdam Convention ▶ ILO conventions on chemicals ▶ INFOCAP <p>Environmental issues, including Relevant bills and white papers</p>			
	Consumer confidence and safety				Consumer safety information
	Responsible Care				Information on the Responsible Care initiative

3.2 Assessment of format of website

Format of website		Chemweb	Recommendations
Interactivity	Interactive features	✓ "Contact us" feature	Provide more interactivity, e.g. in the form of a forums, bulletin board, email alert for new information, or online surveys
Design	Logical organisation	✓	
	Presentation	✓ The website is uncluttered and easy to read	
Ease of use	Toolbars	✓ Toolbars are provided	Pop up information windows could be used to describe menu items
	Downloading speed	✓ Acceptable downloading speed	
	Search facility	✓ Search logic is acceptable	The search function should be immediately accessible on the home page
	Contact email	✓	
	Navigational aids	✓ Good use of graphics as navigational aids No site map to aid navigation	Include site map
	Links	✓ Descriptions of links are provided Links are grouped on a high level	<ul style="list-style-type: none"> ▶ Links should be organised into clear categories ▶ Links should be duplicated where the subject matter falls into two categories ▶ Sites should be described in greater depth

4 Recommendations for addressing outstanding information requirements

Key content areas that should be covered by a comprehensive chemicals website include:

- ▶ Market information
- ▶ Resources
- ▶ Careers and skills
- ▶ Current events
- ▶ Companies
- ▶ Chemistry
- ▶ Legislation and regulation
- ▶ Institutional support
- ▶ Research and innovation
- ▶ Health, safety and environment
- ▶ Industry organisations

Overall, the review of international websites revealed that there is a huge proliferation of chemicals sector related information readily available on the world-wide web. The challenge was to prioritise the most relevant sources, according to information needs.

There is a broad range of websites available, including:

- ▶ Industry organisation websites, e.g. the American Chemicals Council website
- ▶ Environmental organisation websites, e.g. the United Nations Environment Programme (UNEP) Chemicals website
- ▶ Government supported websites which provide portals for chemical industries, and environmental and legal information
- ▶ Commercial website providers that provide news and information about the industry e.g. European Chemical News
- ▶ Global or regional organisation websites e.g. OECD website on chemical safety

The recommendations to address the gaps in the information available identified in the previous section are detailed below. Additional links to industry organisations are also provided.

For a detailed overview of relevant websites please refer to Appendices 1 and 2 of this document.

4.1 Market information

	Information required	Suggested links	Description of website	Recommendations
Sector overview	Information for international sub sector markets	http://www.ecvm.org/ http://www.vinyl.org/ https://www.uktradeinvest.gov.uk/ukti/appmanager/ukti/sectors?nfpb=true&pageLabel=vpage_2&virtualPage=Oil http://www.plastics.org/s_plastics/index.asp http://www.worldchlorine.org/ http://www.chlorineinstitute.org/ http://www.c3.org/	Industry organisation websites, e.g.: Vinyl: ▶ European Council of Vinyl manufacturers ▶ Vinyl.org Plastics: ▶ American Plastics council website Chlorine: ▶ World Chlorine Council	Link to sites

	Information required	Suggested links	Description of website	Recommendations
	Information for national and international end use markets	http://www.naacam.co.za	Websites covering end use sectors, e.g.: Automotive: ▶ National Association of Automotive Component and Allied Manufacturers	Link to site
		http://www.cbi.nl/show.php?file=show_document.html&id=33&setSection=exp	Information provided for exporters by the Netherlands – free registration required	Link to site
		http://www.intracen.org/mas/mb.htm	Market briefs provided on the International Trade Centre website	Link to site
Country overview	Market overviews for potential export markets	http://www.cia.gov/cia/publications/factbook/index.html	The CIA provides up to date country profiles for all countries	Link to site
Production	International chemicals production National production	http://www.cefic.org/factsandfigures/level02/growthindustry_index.html	Production information for the EU and international comparisons on CEFIC	Link to site Similar user friendly information should be developed for the South African context
Demand	Demand information for potential export markets and markets other than SADC	See international trade links		
Trends	Global trends in the chemicals sector	http://www.chemistry.org/portal/a/c/s/1/acsdisplay.html?DOC=industry%5Cindustrystate.html	Trends detailed on the American Chemical Society Website	Link to this site
Trade	Trade agreement information	http://www.eurunion.org/legislat/gsp/gsp.htm	Generalised System of Preferences	Link to this site
		http://www.dfa.gov.za/foreign/Multilateral/africa/sacu.htm	Department of Foreign Affairs site on the Southern African Customs Union	Link to this site

	Information required	Suggested links	Description of website	Recommendations
		http://www.comesa.int/	COMESA website	Link to the site Although South Africa is not a COMESA member this site may be useful for companies interested in investing in other African countries
		www.sadcreview.com	SADC Trade, Industry and Investment Review 2004	Link to this site
		www.agoa.gov/	Site for AGOA by the US government	Link to this site
		http://www.southafrica.info/doing_business/sa_trade/agreements/traderelations.htm	South Africa information site that details trade agreements	Link to this site
	Trade issues	http://www.cefic.be/Templates/shwPublications.asp?NID=2&T=3&S=9	CEFIC - Position papers	Link to this site. Links to specific articles on trade issues could also be made.
	International trade of chemicals products	http://www.thedti.gov.za/econdb/raportt/rapmenu1.html	World trade at 3 to 6 digit level with specific information for: <ul style="list-style-type: none"> ▶ South Africa ▶ US ▶ UK ▶ OECD countries ▶ Japan 	Link to specific sections and describe the link, e.g.: Exports and imports of Primary Ethylene Polymer (SITC 571) for 162 countries for 1997 – 2002:
		http://www.austrade.gov.au/australia/layout/0..0_S2-1_CLNTXID0019-.00.html	Austrade search page for information on exporting to other countries	http://www.thedti.gov.za/econdb/raportt/PRIMARYETHYLENEPOLYMERcomtr.html
		http://www.export.gov/tradestatistics.html	Information for exporters on US Trade and international trade statistics	
Employment	Employment in the chemicals sector in South Africa			Develop statistics on employment in the chemicals industry in South Africa
		http://www.labour.gov.za	Department of Labour	Link to this site

	Information required	Suggested links	Description of website	Recommendations
		http://www.cosatu.org.za/affiliates/afficep.htm	CEPPWAWU – Chemicals, Energy, Paper, Printing, Wood and Allied Workers Union of South Africa on the COSATU website	Link to this site
Health and safety indicators	Health and safety indicators for South Africa and other countries	http://www.oecd.org/infobycountry/0,2646,en_2649_34365_1_70915_1_1_1,00.html	OECD Chemicals safety site for South Africa	Link to this site

4.2 Resources

	Information required	Suggested links	Description of website	Recommendations
Academic	Further links to academic resources relating to chemicals research	http://www.chemweb.com/abstracts/	Free search of chemicals abstracts	Link to this site
		http://www.chemweb.com/journals	Free search of chemicals journals, with free access to abstracts	Link to this site

4.3 Careers and skills

	Information required	Suggested links	Description of website	Recommendations
Training/Skills	Information on skills available	http://www.chieta.org.za/home.asp	Chemicals Industry Education and Training Authority	A skills database may be developed by CHIETA; In future link directly to the database Link to the CHIETA site
		http://www.chempeople.com/	Subscription site that facilitates global networking within the chemicals industry	Link to this site
	Further links	http://inventors.about.com/library/inventors/blplastic.htm	Provides a history of plastics	Link to site
		http://www.teachingplastics.com/index.html	Guide and material for teachers on plastics education at three different levels	Link to site
	http://www.chemistry.org/portal/a/c/s/1/educatorsandtudents.html	Educational material for all levels	Link to this site	

4.4 Current events

	Information required	Suggested links	Description of website	Recommendations
Current issues	More recent material on issues facing the chemicals sector			Develop more recent South Africa specific articles with input from industry experts
News	Links to news websites relating to the chemicals sector	http://chemicalmarketreporter.com/home/Default.asp?type=0&liSectionID=12	Chemical Market Reporter provides news and market reports – by subscription only	Link to site – specify that this site is by subscription only
		http://www.chemistry.org/portals/a/c/s/1/newscenter.html	Selection of news articles, journal articles	Link to site
		http://chemweb.tradepub.com/	Comprehensive list linked to chemicals and chemicals-related magazine sites that may need to be accessed by subscription	Link to site. Assess access issues.
		http://www.europeanchemicalnews.com/home/Default.asp?type=1&liArticleID=653063&liSectionID=201	European Chemical News – news in the chemicals industry This link is by subscription only	Link to site Specify that access can be gained only by subscription
Events	Provide details for trade expos and conferences worldwide	http://www.chemnet.com/expo/m/expo/	Provides details for trade expos worldwide	Contact relevant organisations, e.g. Department of Science and Technology to ascertain event schedules and post on website
Tenders	Details on tenders in the chemicals sector in South Africa	http://www.tradeworld.net	Tenders on Tradeworld	Link to site
		http://www.info.gov.za/documents/tenders/index.htm	Tenders published in the government gazette	Link to site
		http://www.engineeringnews.co.za/eng/essentials/tenders/	Tenders on engineering news	Link to site Further, a link to government gazette tenders could be included

4.5 Companies

	Information required	Suggested links	Description of website	Recommendations
Companies	Information on BEE companies			Link to dti database of BEE companies when available online

4.6 Chemistry

	Information required	Suggested links	Description of website	Recommendations
Chemistry in daily life	Chemistry information for people outside the chemicals sector	http://www.cefic.be/Template/s/shwStory.asp?NID=13&HID=104	Information on chemicals uses and products pitched at a level that is widely understandable	Link to site
Physical processes	Information on physical processes used in the manufacture of chemicals	http://www.chemical-industry.org.uk/	Physical processes	Link to site
Chemical reactions	Information on reactions used in the manufacture of chemicals	http://www.cas.org/CASFILES/casreact.html	Information on chemical reactions	Link to site
		http://www.chem.ox.ac.uk/vr/chemistry/	Chemistry department at Oxford University	Link to site
		http://www.chemical-industry.org.uk/	Information on chemical reactions	Link to site

4.7 Legislation and regulation

	Information required	Suggested links	Description of website	Recommendations
Relevant legislation	Agriculture related	http://www.ais.up.ac.za/vet/fertiliz.pdf	Fertilizers, Farm Feeds, Agricultural Remedies and Stock Remedies Act	Link to this document
		http://www.polity.org.za/policies/2003/	Agricultural Produce Agents Amendment act (No. 47 of 2003)	Link to relevant legislation
		http://www.polity.org.za/html/govdocs/bills/1998/index.html	Agricultural Product Standards Amendment Bill, No.24	Link to relevant legislation
		http://www.polity.org.za/html/govdocs/legislation/1997/index.html	Marketing of Agricultural Products Amendment Act, No.59	Link to relevant legislation

	Labour	http://www.polity.org.za/pol/acts/2002/	Basic Conditions of Employment Amendment Act (No. 11 of 2002)	Link to relevant legislation
		http://www.polity.org.za/pol/acts/2002/	Labour Relations Amendment Act (No. 12 of 2002)	Link to relevant legislation
	Businesses	http://www.polity.org.za/pol/acts/2004/	Companies Amendment Act (No. 20 of 2004)	Link to relevant legislation
	Health	http://www.info.gov.za/gazette/acts/1993/a85-93.htm	Occupational Health and Safety Act	Link to this site
		http://www.polity.org.za/html/govdocs/legislation/1997/index.html	Compensation for Occupational Injuries and Diseases Amendment Act, No.61	Link to relevant legislation
		http://www.polity.org.za/pol/acts/2003/	National Health Act (No. 61 of 2003)	Link to relevant legislation
		http://www.polity.org.za/pol/acts/2002/	Occupational Diseases in Mines and Works Amendment Act (No. 60 of 2002)	Link to relevant legislation
	Disaster management	http://www.polity.org.za/pol/acts/2002/	Disaster Management Act (No. 57 of 2002)	Link to relevant legislation
	Engineering/ Professional related	http://www.polity.org.za/html/govdocs/bills/2000/index.html	Engineering Profession Bill, No 19	Link to relevant legislation
		http://www.polity.org.za/pol/acts/2003/	Natural Scientific Professions Act (No. 27 of 2003)	Link to relevant legislation
	Environment related	http://www.polity.org.za/html/govdocs/bills/1996/index.html	Environment Conservation Act Extension Bill, No.66	Link to relevant legislation
		http://www.polity.org.za/pol/acts/2003/	Environment Conservation Amendment Act (No. 50 of 2003)	Link to relevant legislation
		http://www.polity.org.za/html/govdocs/legislation/1997/index.html	Environmental Laws Rationalisation Act, No.51	Link to relevant legislation
		http://www.polity.org.za/pol/acts/2003/	National Environmental Management Amendment Act (No. 46 of 2003)	Link to relevant legislation
		http://www.polity.org.za/pol/acts/2002/	National Environmental Management Amendment Act (No. 56 of 2002)	Link to relevant legislation
		http://www.polity.org.za/pol/bill/2003/	National Environmental Management Amendment Bill (B 29-2003)	Link to relevant legislation

		http://www.polity.org.za/pol/acts/2004/	National Environmental Management: Biodiversity Act (No. 10 of 2004)	Link to relevant legislation
		http://www.polity.org.za/pol/acts/2003/	National Environmental Management: Protected Areas Act (No. 57 of 2003)	Link to relevant legislation
		http://www.polity.org.za/pol/bill/2004/	National Environmental Management: Protected Areas Amendment Bill (B 2-2004)	Link to relevant legislation
	Explosives	http://www.polity.org.za/pol/acts/2003/	Explosives Act (No. 15 of 2003)	Link to relevant legislation
	Intellectual property	http://www.polity.org.za/html/govdocs/legislation/2001/index.html	Patents Amendment Act, 10	Link to relevant legislation
		http://www.polity.org.za/html/govdocs/legislation/1997/index.html	Intellectual Property Laws Amendment Act, No.38	Link to relevant legislation
	Petroleum related	http://www.polity.org.za/pol/acts/2002/	Mineral and Petroleum Resources Development Act (No. 28 of 2002)	Link to relevant legislation
		http://www.polity.org.za/pol/bill/2002/	Mineral and Petroleum Royalty Bill (B 1-2002)	Link to relevant legislation
		http://www.polity.org.za/pol/acts/2003/	Petroleum Pipelines Act (No. 60 of 2003)	Link to relevant legislation
		http://www.polity.org.za/pol/bill/2004/	Petroleum Pipelines Levies Bill (B 18-2004)	Link to relevant legislation
		http://www.polity.org.za/pol/acts/2003/	Petroleum Products Amendment Act (No. 58 of 2003)	Link to relevant legislation
		http://www.polity.org.za/pol/bill/2004/	Petroleum Products Amendment Bill (B 16-2004)	Link to relevant legislation
		http://www.polity.org.za/pol/bill/2003/	Petroleum products amendment bill (B25-2003)	Link to relevant legislation
	Research	http://www.polity.org.za/html/govdocs/legislation/1998/index.html	National Research Foundation Act, No.23	Link to relevant legislation
	Pharmacies related	http://www.polity.org.za/html/govdocs/legislation/1995/index.html	Pharmacy Amendment Act, No.6	Link to relevant legislation

4.8 Institutional support

	Information required	Suggested links	Description of website	Recommendations
Incentive and support entities	More direct links to entities	http://www.twib.co.za	Technology for Women in Business (TWIB)	Link to site
		http://www.idc.co.za	Industrial Development Corporation	Link to site
		http://www.treasury.gov.za	National Treasury	Link to site
		http://www.thedti.gov.za/thedti/organisation1e.htm	The Enterprise Office (TEO)	Link to site
		http://www.theinnovationhub.com	The Innovation Hub	Link to site
		http://www.dti.gov.za/offeringsofferinggroup.asp?offeringgroupid=22	Small Business Development	Link to site
		http://www.dti.gov.za/offeringsofferinggroup.asp?offeringgroupid=25	Technology Transfer Guarantee Fund	Link to site
		http://www.spil.co.za	SPII Fund	Link to site
		www.nrf.ac.za	National Research Foundation	Link to site
		www.dst.gov.za	Department of Science and Technology	Link to site
		www.innovationfund.ac.za	Innovation Fund	Link to site

4.9 Research and innovation

	Information required	Suggested links	Description of website	Recommendations
Research and innovation	R&D expenditure	http://www.hsrc.ac.za/RnDSurvey/downloads/2001_02RnDSurveyIndex.pdf	South African National Survey of Research and Experimental Development 2001/02	Link to this document
	Additional sources of information	http://www.theinnovationhub.com	The Innovation Hub	Link to this site
		http://www.chemweb.com/abstracts/	Free search of chemicals abstracts	Link to this site

4.10 Health, Safety & Environment

	Information required	Suggested links	Description of website	Recommendations
Hazards	Further links			Provide companies' Materials Safety sheets on website
		http://www.chem.unep.ch/irptc/default.htm	UNEP chemicals programme page. Provides information on UNEPs chemicals programmes	Link to site
		http://www.unitar.org/cwm/about.htm	UNITAR Chemicals & Waste	Link to site
		http://www.basel.int/	Basel Convention	Link to site
		http://www.who.int/ifcs/infocap/	INFOCAP	Link to site
		http://www.who.int/ipcs/en/	IPCS	Link to site
		http://www.who.int/ifcs/	Intergovernmental Forum on Chemical Safety	Link to site
		http://www.oecd.org/department/0,2688,en_2649_34365_1_1_1_1_1,00.html	Comprehensive site relating to chemicals safety	Link to site
		http://www.chemistry.org/portals/a/c/s/1/acdisplay.html?DOC=greenchemistryinstitute/index.html	Green Institute	Link to site
International initiatives	Responsible Care Initiative	http://www.cefic.be/Template/s/shwStory.asp?NID=3&HID=8	CEFIC -Responsible Care	Link to site
		http://www.responsiblecare-us.com/	American Chemistry Council (ACC) - Responsible Care	Link to site
		http://www.fecc.org/en/index.php?pageid=45	FECC - Responsible Care	Link to site
		http://www.chemical-industry.org.uk/responsiblecare.htm	The Chemical Industry - responsible care	Link to site
		http://www.icca-chem.org/section02a.html	ICCA - Responsible Care	Link to site
		http://www.mbendi.co.za/caia/rescare.htm	CAIA - Responsible Care	Link to site

		http://www.ccpa.ca/ResponsibleCare/	Responsible Care at the Canada Chemicals Producers Association page. The responsible care initiative was originated by this organisation	Link to site
	High Production Volumes Initiative	http://www.icca-chem.org/section02b.html	High Production Volume (HPV) Chemicals Initiative	Link to site
	Long range research initiative	http://www.icca-chem.org/section02c.html	ICCA - Long-range Research Initiative	Link to site
		http://www.cefic-lri.org/Templates/shwStory.asp?NID=19&HID=369	CEFIC - Long-range Research Initiative	Link to site
		http://www.uslri.org/	ACC - Long-range Research Initiative	Link to site
		http://www.j-lri.org/	JCIA - Long-range Research Initiative	Link to site
		http://www.uslri.com/	Long range research initiative in the US	Link to site
Sustainable development	Further information on sustainable development	http://www.unep.org/themes/chemicals/	United Nations Environment Programme (Division of Technology, Industry and Economics)	Link to site
		http://europa.eu.int/comm/environment/chemicals/	Chemicals and the environment on the EU site	
		http://unfccc.int/2860.php	United Nations Framework on climate change Provides information on climate change an the Kyoto protocol	Link to site
Consumer confidence and safety	Further information on consumer health and safety	http://www.fda.gov/	US Food and Drug Administration – information on products	Link to site
		http://europa.eu.int/comm/consumers/cons_safe/prod_safe/chem_risks/index_en.htm	EU site on consumer safety with relation to chemicals	Link to this site

4.11 Industry organisations

	Information required	Suggested links	Description of website	Recommendations
Industry organisations	Links to international industry organisations	http://www.icca-chem.org/	International Council of Chemical Associations Provides information on health, safety and environmental issues	Link to site
		http://www.chemistry.org/portals/a/c/s/1/acsdisplay.html?DOC=careers.html	American Chemical Society	Link to site
		http://www.plasticsindustry.org/	Society of the Plastics Industry (United States)	Link to site
		http://www.ccpa.ca/	Canada's Chemicals Producers	Link to site
		http://www.nikkakyo.org/English/organizations/lri/index.php3/	Japan Chemical Industry Association	Link to site
		http://www.nicnas.gov.au/	National Industrial Chemicals Notification and Assessment Scheme (NICNAS) provides assessments of chemicals in Australia in terms of health and safety concerns	Link to site
		http://www.pacia.org.au/	Plastics and Chemicals Industry Association Australia	Link to site
		http://www.nzic.org.nz/	New Zealand Institute of Chemistry Does not provide much content	Link to site

5 Strategy for ongoing expansion of information system

The website should be maintained with the objectives of keeping the content and format up to date, and relevant. This can be done by:

- ▶ Regularly assessing new links and sources of information
- ▶ Regularly checking that links function correctly
- ▶ Developing new information on a regular basis
- ▶ Conducting regular user satisfaction surveys

As highlighted by the analysis above, most of the information gaps identified above can be addressed by providing links to other websites. These websites to which links are made should be assessed according to their content and format. This should be done according to the criteria set out below.

5.1 Ongoing screening of potential sources of information

Potential sources of information that relate to both the South African context and the international chemicals industry should be identified as they become available for further expansion of the information system.

These could include:

- ▶ Industry studies by chemical consultants or industry experts
- ▶ Databases developed to include information on chemical products, companies, or skills
- ▶ Government notices of legislation, regulation and tenders
- ▶ International and South African websites

Websites to which links can be established should be evaluated according to their content and their format:

Criteria to assess a website's content

Criteria ¹	Considerations	Recommendations
Authority	<ul style="list-style-type: none"> ▶ Is it clear who is responsible for the site? ▶ Is the source appropriate to the type of information provided? ▶ Is the site an official site of an organisation? ▶ Can the information be verified? ▶ Can the author be contacted? ▶ Has the site received reviews and have these been favourable? 	<ul style="list-style-type: none"> ▶ The website should be managed by a reputable industry organisation ▶ There should be contact details of the responsible authority
Currency	<ul style="list-style-type: none"> ▶ Is the site regularly updated? ▶ Is the frequency of up dating appropriate to the information? ▶ Is new information included on a timely basis? 	<ul style="list-style-type: none"> ▶ Information that should be updated regularly: <ul style="list-style-type: none"> ○ News, events, tenders ▶ Information which should

¹Developed from:

<http://nnlm.gov/scr/conhlth/evalsite.htm>

<http://www.llrx.com/features/evaluating.htm#Criteria%20of%20Evaluation>

<http://www.clubi.ie/webserch/resources/integrity.htm>

<http://www.isinet.com/essays/selectionofmaterialforcoverage/23.html/>

<http://library.usm.maine.edu/research/researchguides/webevaluating.html>

Criteria ¹	Considerations	Recommendations
	<ul style="list-style-type: none"> ▶ Is older information archived? ▶ Does the site have clear pointers to new content? ▶ Is there a commitment to ongoing maintenance of the resource? 	<p>be updated on a timely basis:</p> <ul style="list-style-type: none"> ○ Changes in legislation or regulation
Accuracy	<ul style="list-style-type: none"> ▶ Is the information in the resource accurate? ▶ Has the information been through a selection process? ▶ Is the information supported by research findings? ▶ Is there a facility for sending corrections to inaccurate information? 	<ul style="list-style-type: none"> ▶ The information presented should be accurate and verifiable
Relevance	<ul style="list-style-type: none"> ▶ Is the information relevant to the chemicals sector? ▶ What is the intended audience? ▶ Is the level at which the resource is pitched appropriate for the intended audience? ▶ Is the material appropriate for minors? 	<ul style="list-style-type: none"> ▶ The information should be relevant to the chemicals sector of South Africa ▶ The information should be accessible to both industry and non-industry audiences
Objectivity	<ul style="list-style-type: none"> ▶ What is the purpose of the site? ▶ Is the resource reasonably balanced? ▶ Is the information based on fact or opinion? 	<ul style="list-style-type: none"> ▶ The purpose of the site should be clearly stated so that any bias is made clear
Comprehensiveness	<ul style="list-style-type: none"> ▶ Is the resource comprehensive within its given area? ▶ What is the level of detail? ▶ Is there adequate coverage of the subject? ▶ Are there any obvious omissions? ▶ Is the site still under construction and therefore incomplete? ▶ Does the site contain original information or links or both? 	<ul style="list-style-type: none"> ▶ The site should be as comprehensive as possible within its given scope
Coverage	<ul style="list-style-type: none"> ▶ What is the scope of the website? ▶ What is the range of different subjects covered within the area? ▶ What is the retrospective coverage of the source? ▶ What type of information is included? ▶ Does the resource cover the subject adequately? ▶ Are there any links to further information? 	<ul style="list-style-type: none"> ▶ The website should cover any subject that may impact on chemicals industry stakeholders including companies, support industries, research institutions, government, the environment, labour and consumers

Criteria to assess a website's format

² Criteria	Considerations	
Design and layout	<ul style="list-style-type: none"> ▶ Is the resource well designed? ▶ Is there effective use of navigation aids such as a site map, index, menus, toolbars or search facility? ▶ Is the design consistent between different parts of the same resource? ▶ Are images used appropriately? ▶ Is advertising used appropriately or does it detract from the value of the information? ▶ Is user support provided? ▶ Are links clearly identifiable? 	<ul style="list-style-type: none"> ▶ The website should be attractively designed and clearly laid out so that information can be easily accessed. (Otherwise user will be deterred from using the site regularly)
Presentation	<ul style="list-style-type: none"> ▶ Is the writing of good quality? ▶ Are graphics professionally presented? ▶ Are there any typographical or grammatical errors? 	<ul style="list-style-type: none"> ▶ All information should be presented in clear language, although the type of language used will differ according to the audience for which the site is intended
Copyright and cost issues	<ul style="list-style-type: none"> ▶ Do users need to register to use the resource, and if so, is this a straightforward process? ▶ Is there a charge to access the resource and how does this compare to other materials? ▶ Is the price structure indicated? ▶ Are services available with limited functionality, or for trial periods? ▶ Is there sufficient transaction security for payments? 	<ul style="list-style-type: none"> ▶ Links can be provided whether the site requires a subscription or not, as the users then have the choice of subscribing ▶ Links that require a subscription should be described as such ▶ Sites which require subscription may be willing to pay for advertising on the portal site

² <http://nlnm.gov/scr/conhlth/evalsite.htm>

<http://www.llrx.com/features/evaluating.htm#Criteria%20of%20Evaluation>

<http://www.clubi.ie/webserch/resources/integrity.htm>

<http://www.isinet.com/essays/selectionofmaterialforcoverage/23.html/>

<http://library.usm.maine.edu/research/researchguides/webevaluating.html>http://www.vuw.ac.nz/staff/alastair_smith/evaln/index.htm

<http://hitiweb.mitretek.org/docs/policy.html>

<http://biome.ac.uk/guidelines/eval/summary.html>

5.2 Promotion of awareness and usage of the website

The website should also be promoted to increase awareness and usage of the site. This can be done by:

- ▶ Direct emailing to stakeholders
- ▶ Tailoring of content to user needs
- ▶ Interactive features to drive traffic to the site
- ▶ Links on related pages, such as industry organisation sites, government sites, and general information sites such as www.southafrica.info.

Means of assessing the success of website promotion should be set up, including:

- ▶ Website traffic measurement
- ▶ User interviews

This would require sufficiently skilled human resources for both technical and strategic applications. These functions of website/content manager could be outsourced or appointed in-house.

Appendix 1: Overview of major national sites

Website name	URL	Chemical Hazard - Production	Chemical Hazard - Use	Applicable legislation	International chemical initiatives	SA industry info	Comment
Chemweb	new address: http://www.chemissa.co.za/new/	✓ Articles (e.g. The Chemical Industry's Health, Safety and Environmental Initiative article) and environmental issues links	✓ Articles (e.g. The Chemical Industry's Health, Safety and Environmental Initiative article) and environmental issues link			✓	Create section based upon Good overview of SADC countries and South Africa, good structure and good categorisation on banners. Good method of either providing information on their pages or linking directly to other sites. This could form the basis of recommended structure for site.
Chemissa	http://www.chemissa.co.za					✓	Provides information on consumption and trade of chemicals in fourteen SADC countries
Empowerment of African Sustainable Development	http://www.easd.org.za/default.asp	✓ White Paper on Environmental Management Policy and Draft White Paper on Integrated Pollution and Waste Management for South Africa					

Website name	URL	Chemical Hazard - Production	Chemical Hazard - Use	Applicable legislation	International chemical initiatives	SA industry info	Comment
South African Government Information	http://www.info.gov.za			✓			Link Provides access to legislation , draft legislation and policy documents
Policy and Law Online News	http://www.polity.org.za/pol/home/			✓			Link Provides access to all South Africa Bills and Acts. Link page could include suggested links to relevant legislation
Mbendi Chemicals Industry Profile	http://www.mbendi.co.za/indy/chem/af/sa/p0005.htm					✓	Create section based upon Provides a good overview of the industry including industry structure, incentives and contacts for major players. May be useful to link to as background reading on SA chemicals industry (CAIA already does this). Stats section is a bit dated (1994-1998).
Chemical and Allied Industries' Association (CAIA)	http://www.mbendi.co.za/caia/index.htm				✓ Responsible Care	✓	Link Representative body link. Section on responsible care only relevant section worth linking to.
South African Petroleum Industry Association	http://www.mbendi.com/sapia/					✓	Link Representative body link.
South Africa Institution of Chemical Engineers (SAICHE)	http://www.saiche.co.za/					✓	Link Representative body link

Website name	URL	Chemical Hazard - Production	Chemical Hazard - Use	Applicable legislation	International chemical initiatives	SA industry info	Comment
South African Chemical Institute	http://www.saci.co.za/					✓	Link Representative body link Information is out dated and not easy to navigate.
Science and Technology Research Organisation (CSIR)	www.csir.co.za/					✓	Link May be useful to link to section on Bio/Chemtek.
South African Bureau of Standards	http://www.sabs.co.za/					✓	Link May be useful as a link for standards, regulation and for chemical / petrochemical commercial services offered

Appendix 2: Overview of key international sites

Website name	URL	Chemical Hazard - Production	Chemical Hazard - Use	Applicable legislation	International chemical initiatives	Industry info	Comment
The International Council of Chemical Associations (ICCA)	http://www.icca-chem.org/				✓ Responsible Care High Production Volume (HPV) Chemicals Initiative Long-range Research Initiative	✓	Link International Representative body link and links to international chemical initiatives
American Chemical Society	http://www.chemistry.org					✓	Link International Representative body link that has further links to databases, directories and other chemicals based resources
CEFIC (European Chemical Industry Council)	http://www.cefic.be				✓ Responsible Care Long-range Research Initiative Trade – Position papers	✓	Link International Representative body link that has further info on chemicals industry in EU.
American Chemistry Council (ACC)	http://www.americanchemistry.com/				✓ Responsible Care Long-range Research Initiative	✓	Link International Representative body link that has further info on chemicals industry in USA

Website name	URL	Chemical Hazard - Production	Chemical Hazard - Use	Applicable legislation	International chemical initiatives	Industry info	Comment
The Chemical Industry	http://www.chemical-industry.org.uk/				✓ Responsible Care	✓	Link International Representative body link that has further info on chemicals industry in UK
Japan Chemical Industry Association (JCIA)	http://www.nikkakyo.org/English/index.php3				✓ Long-range Research Initiative	✓	Link International Representative body link that has further info on chemicals industry in Japan
The Physical and Theoretical Chemistry Laboratory Oxford University Chemical and Other Safety Information	http://physchem.ox.ac.uk/MSDS/	✓	✓				Link Source of general information about safety and the potential hazards of chemicals
National Institute for Occupational Safety and Health - Chemical Safety Databases and Other Resources	http://www.cdc.gov/niosh/topics/chemical-safety/default.html	✓	✓				Link Source of information on chemical hazards
International Programme on Chemical Safety (IPCS) INCHEM	http://www.inchem.org/	✓	✓				Link Source of information on chemical hazards

Website name	URL	Chemical Hazard - Production	Chemical Hazard - Use	Applicable legislation	International chemical initiatives	Industry info	Comment
ChemQuik MSDS (Material Safety Data Sheet) Sources	http://www.chemquik.com/site/cq/freecq-sources.asp	✓	✓				Link Source of information on chemical hazards
Emergency response guide 2000	http://www.tc.gc.ca/canutec/erg_gmu/erg2000_menu.htm	✓	✓				Link Source of information on chemical hazards
Hazardous substances databank	http://ull.chemistry.uakron.edu/erd/	✓	✓				Link Source of information on chemical hazards
HazDat database	http://www.atsdr.cdc.gov/hazdat.html	✓	✓				Link Source of information on chemical hazards
An Introduction to Chemical Hazards in the Workplace	http://www.dhs.ca.gov/ohb/HESIS/uts.htm	✓	✓				Link Source of information on chemical hazards
Chemical Hazards Communication Society	http://www.chcs.org.uk/	✓	✓				Link Source of information on chemical hazards
Chemical Hazards in Industry	http://www.rsc.org/is/database/chihome.htm	✓	✓				Link A monthly newsletter which reports on health and safety issues for all sectors of the chemical and allied industries

Website name	URL	Chemical Hazard - Production	Chemical Hazard - Use	Applicable legislation	International chemical initiatives	Industry info	Comment
OECD Website - Chemical safety	http://www.oecd.org/topic/0,2686,en_2649_34365_1_1_1_1_3746_5,00.html	✓	✓				Link Source of information on chemical hazards
United Nations Environment Programme (UNEP) Chemicals	http://www.unep.org/themes/chemicals/	✓	✓				Link UN body that seeks to encourage partnership in caring for the environment
United Nations Environment Programme (Division of Technology, Industry and Economics)	http://www.uneptie.org/						
FECC: The European Association of Chemical Distributors	http://www.fecc.org/en/index.php?pageid=43				✓ Responsible Care	✓	Link International Representative body link that has further info on chemicals industry in Europe
UNITAR Chemicals & Waste	http://www.unitar.org/cwm/about.htm				✓ Chemical and waste management		Link UN Institute for Training and Research – Chemical and waste management programme

Website name	URL	Chemical Hazard - Production	Chemical Hazard - Use	Applicable legislation	International chemical initiatives	Industry info	Comment
Basel Convention	http://www.basel.int/				✓ Chemical and waste management		Link UNEP site providing information on the Basel Convention
INFOCAP	http://www.who.int/ifcs/infocap/				✓ Chemical and waste management		Link Information Exchange Network on Capacity Building for the Sound Management of Chemicals
Rotterdam Convention	http://www.pic.int/en/vi ewpage.asp?id_cat=0				✓ Prior Informed Consent		Link Provides information on the Rotterdam Convention on PIC
Stockholm Convention	http://www.pops.int/				✓ Persistent Organic Pollutants		Link Provides information on the Stockholm Convention on POP
Organisation for the Prohibition of Chemical Weapons (OPCW)	http://www.opcw.org				✓ Prohibition of chemical weapons		Link Provides information on the OPCW and it efforts to abolish chemical weapons

Website name	URL	Chemical Hazard - Production	Chemical Hazard - Use	Applicable legislation	International chemical initiatives	Industry info	Comment
WHO - International Programme on Chemical Safety	http://www.who.int/ipcs/en/	✓	✓		✓ Chemical safety		Link Provides information on the IPCS and its efforts to establish the scientific basis for safe use of chemicals, and to strengthen national capabilities and capacities for chemical safety.
Intergovernmental Forum on Chemical Safety	http://www.who.int/ifcs/						Link Provides information on the IFCS and how it develops and promotes strategies and partnerships among national governments, intergovernmental and non-governmental organizations
Chemical Market Reporter	http://chemicalmarketreporter.com					✓	Subscription website with news and market information
European Chemical News	http://www.europeanchemicalnews.com					✓	Subscription website with news and market information

Website name	URL	Chemical Hazard - Production	Chemical Hazard - Use	Applicable legislation	International chemical initiatives	Industry info	Comment
Chemicals technology	http://www.chemicals-technology.com					✓	Market information, news, extensive links