

NATIONAL LIBRARY OF MEDICINE

*Web Resources for
Environmental Health Research*



SEPTEMBER 12, 2010



THE SEVENTH INTERNATIONAL SYMPOSIUM ON
RECENT ADVANCES AND ENVIRONMENTAL HEALTH RESEARCH





**THE NATIONAL LIBRARY OF MEDICINE
WEB RESOURCES FOR
ENVIRONMENTAL HEALTH RESEARCH**

**A Specialized Training Course
developed for the**

**Seventh International Symposium on Recent Advances in
Environmental Health Research**

Presented at

Jackson State University

**Jackson, Mississippi
September 12, 2010**

Disclaimer

Every effort has been made to ensure that the screen graphics and the exercises in this document are up-to-date and accurate. However, due to the frequency of Web updates, they may have changed.



The Oak Ridge Institute for Science and Education (ORISE) is a U.S. Department of Energy institute focusing on scientific initiatives to research health risks from occupational hazards, assess environmental cleanup, respond to radiation medical emergencies, support national security and emergency preparedness, and educate the next generation of scientists. ORISE is managed by Oak Ridge Associated Universities.

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Preface

The *National Library of Medicine Web Resources for Environmental Health Research* is designed to meet the needs of environmental and biomedical scientists, researchers, and policy makers who need information on health issues related to exposure to hazardous substances in the environment—including those that are naturally-occurring—and environmental agents known to induce illnesses, including cancer and health disparities.

The National Library of Medicine (NLM) is sponsoring this course to increase awareness of the availability and value of NLM's online environmental health and toxicology information resources that provide invaluable tools to address these issues—for professionals and consumers alike. Participants will receive hands-on practice with selected NLM resources, and demonstrations of other valuable resources will be provided.

Major emphasis will be placed on navigating NLM's TOXNET® (Toxicology Data Network) databases and related resources, which provide access to references, online handbooks, and databases related to the adverse affects of chemicals and other agents. MEDLINE®/PubMed®, NLM's premier medical database will also be covered.

This workbook is designed to be used as a reference following the course. It contains exercises using realistic scenarios for the NLM resources covered as well as information on some of NLM's newest resources and lists of other health information resources selected for their quality and relevant content.

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Agenda

12:30 p.m. Welcome and Introductions

12:40 p.m. Introduction

- The NLM Environmental Health and Toxicology Portal
- TOXNET and Related Files: Overview

12:55 p.m. ChemIDplus, HSDB, and IRIS  (*with hands-on practice*)

1:30 p.m. CCRIS, GTENE-TOX, and ITER  (*with hands-on practice*)

1:50 p.m. TRI and TOXMAP  (*with hands-on practice*)

2:45 p.m. MEDLINE/PubMed, TOXLINE, and DART  (*with hands-on practice*)

3:10 p.m. More to Explore (*instructor demonstrations*)

3:50 p.m. Questions and Post-test

4:00 p.m. Class Ends

Introduction



Introduction

Purpose

The purpose of this training is to familiarize participants, such as biomedical scientists, researchers, and community leaders, with reliable online health information from the National Library of Medicine (NLM) and other resources that address toxicological and environmental health issues pertaining to environmental health disparities and related medical conditions. Skills and knowledge acquired in this course will enable representatives of minority-serving academic institutions to reduce health disparities through the access, use and delivery of environmental health information on their campuses and in their communities.

Objectives

After completing this course, participants will be able to:

- ▶ Identify and evaluate quality, accurate, and authoritative online resources pertaining to environmental health, toxicology, and related medical information.
- ▶ Demonstrate the ability to perform strategic search techniques to find toxicology and environmental health information.
- ▶ Apply the skills and knowledge obtained in this course to their campus curricula and local communities.

NLM Online Resources Covered in this Course

The following key resources will be covered in depth with time given for hands-on practice:

- ▶ **ChemIDplus**—access to structure and nomenclature authority databases for the identification of chemical substances cited in NLM databases
- ▶ **Hazardous Substances Data Bank (HSDB)**—comprehensive, peer-reviewed toxicological data for over 5,000 chemicals
- ▶ **Integrated Risk Information System (IRIS)**—carcinogenic and non-carcinogenic information on over 500 chemicals
- ▶ **Chemical Carcinogenesis Research Information System (CCRIS)**—scientifically evaluated and fully referenced data on over 9,000 chemicals
- ▶ **GENE-TOX**—genetic toxicology test data on over 3,000 chemicals resulting from expert peer review of the open scientific literature
- ▶ **International Toxicity Estimates for Risk (ITER)**—side-by-side comparisons of international risk assessment information on over 600 chemicals with links to source documentation
- ▶ **Toxics Release Inventory (TRI)**—information on annual environmental releases of over 600 toxic chemicals from the U.S. Environmental Protection Agency (EPA)

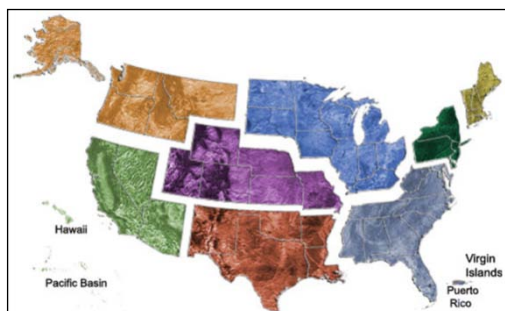
- ▶ **TOXMAP**—a geographic information system that uses maps of the United States to help users visually explore TRI data
- ▶ **MEDLINE/PubMed**—access to more than 19 million references to journal articles published in 5,400 journals in the fields of medicine and the life sciences
- ▶ **Toxicology Literature Online (TOXLINE)**—a bibliographic toxicology database covering over 4 million bibliographic citations
- ▶ **Developmental and Reproductive Toxicology (DART)**—a bibliographic toxicology database covering over 4 million bibliographic citations

The following resources are included in the “More to Explore” section of this workbook. There may not be time for hands-on practice for all of these resources. However, exercises are included in the book for your reference, and the resources will be demonstrated.

- ▶ **Enviro-Health Links**—selected links to Internet resources on toxicology and environmental health issues of recent special interest
- ▶ **ToxSeek**—a metasearch engine that enables simultaneous searching of many different information resources on the World Wide Web
- ▶ **ALTBIB**—a bibliography on alternatives to the use of live vertebrates in biomedical research and testing
- ▶ **Carcinogenic Potency Database**—developed at the University of California, Berkeley, and Lawrence Berkeley Laboratory—provides standardized analyses of the results of 6540 chronic, long-term animal cancer tests (both positive and negative for carcinogenicity) that have been conducted since the 1950s and reported in the general published literature or by the National Cancer Institute and the National Toxicology Program
- ▶ **Haz-Map**—an occupational toxicology database that links job tasks to occupational diseases and their symptoms
- ▶ **Household Products Database**—human health effects information on over 10,000 brand-name consumer products

NLM Database Assistance

NLM database assistance is available online, by phone, by e-mail, and through the National Network of Libraries of Medicine (NN/LM) health science libraries and information centers.



The 8 Regions of the NN/LM

The NN/LM is organized into eight regions coordinated by the NLM. The regional libraries work closely with NLM to provide equal access to biomedical information.

Please refer to the inside back cover of this workbook for information on how to contact these help resources

The NLM Environmental Health and Toxicology Portal

The NLM's **Environmental Health and Toxicology Portal** provides a starting point for seeking reliable information on toxicology, hazardous chemicals, environmental health, and toxic releases.



The screenshot shows the NLM Environmental Health and Toxicology Portal website. The header includes the U.S. Department of Health & Human Services logo, the website title, and the National Library of Medicine logo. The main content area is divided into several sections: 'Find Information About...' with a list of links, 'Search TOXNET' with a search box, 'In the Spotlight' with featured links, 'Stay Connected' with social media links, and 'News & Events'. A central image shows several large, colorful drums, with the text 'Toxicology Information' overlaid. To the left of the website, there are two annotations: 'Find Information by Topic & Intended Audience' pointing to the 'Find Information About...' section, and 'Reference Tools & Additional Resources' pointing to the 'Search Our Web Site' and 'A to Z Index of Resources' sections. To the right, an annotation 'Search all TOXNET Databases' points to the 'Search TOXNET' section.

Find Information by Topic & Intended Audience

Reference Tools & Additional Resources

Search all TOXNET Databases

sis.nlm.nih.gov/enviro.html

Browse the easily navigable site by topic or audience. Explore related resources using the **A to Z Index of Resources**. The **Other Professional Resources** include database descriptions, fact sheets, a list of NLM databases and electronic resources. You can also search all TOXNET databases from this page.

Additional Resources

For further information, we recommend these additional resources:

- ▶ [Getting the Most from SIS's Environmental Health and Toxicology Resources](http://sis.nlm.nih.gov/getthemostrfromsis.html)
- ▶ [NLM's Environmental Health and Toxicology Resources Quick Tour](http://sis.nlm.nih.gov/enviro/captivate/tehipoverview.htm)
- ▶ [Publications and Reference Materials](http://sis.nlm.nih.gov/enviro/enviropubs.html)

TOXNET and Related Files: Overview

NLM's **TOXNET** (Toxicology Data Network) is a free, Web-based system of databases on toxicology, environmental health, hazardous chemicals, toxic releases, chemical nomenclatures, and specialty areas such as occupational health and consumer products. Information includes specific chemicals, mixtures, and products; unknown chemicals; and special toxic effects of chemicals in humans and/or animals.

The screenshot shows the TOXNET website interface. The header includes the NLM logo and the text 'United States National Library of Medicine' and 'TOXNET Toxicology Data Network'. Below the header is a navigation bar with links: 'TOXNET PDIA Access', 'SIS Home', 'About Us', 'Site Map & Search', and 'Contact Us'. The main content area is divided into three columns. The left column, titled 'Select Database', lists various databases with checkboxes and information icons. The middle column, titled 'Search All Databases', contains a search box and buttons for 'Search', 'Clear', and 'Help'. The right column contains links to 'Env. Health & Toxicology' and 'Support Pages'. Annotations with arrows point to specific features: 'Select a TOXNET database to search' points to the 'Select Database' column; 'Search multiple databases' points to the 'Multi-Database' option; 'Search all databases' points to the 'Search All Databases' column; 'Link to the EH/Tox Portal' points to the 'Env. Health & Toxicology' link; and 'Support Pages' points to the 'Support Pages' section.

toxnet.nlm.nih.gov

Types of information in the TOXNET databases include:

- ▶ Specific chemicals, mixtures, and products
- ▶ Unknown chemicals
- ▶ Special toxic effects of chemicals in humans and/or animals

Click the information icon (?) to the right of each database in the **Select Database** column for a description of the database, a link to the fact sheet, and a sample record.

The TOXNET Databases

The TOXNET databases can be grouped in the following categories:

- ▶ Chemical Nomenclature—ChemIDplus
- ▶ Toxicology Data (one record per chemical)—HSDB, IRIS, CCRIS, GENE-TOX, ITER, and LactMed—can also search any combination of these files with the **Multi-Database** feature
- ▶ Toxicology Literature (bibliographic references)—TOXLINE and DART
- ▶ Toxic Releases—TRI and TOXMAP
- ▶ Specialty Databases—Haz-Map, Household Products Database
- ▶ Basic Searching in TOXNET

Searching the TOXNET Databases

From the TOXNET home page, you can search all TOXNET databases simultaneously. Your results will be displayed as links to the databases in which your search term(s) were found—and the number of records in each—under the headings: **References from the Biomedical Literature** (TOXLINE and DART) and **Chemical, Toxicological, and Environmental Health Data** (all others).

TOXNET - Databases on toxicology, hazardous chemicals, environmental health, and toxic releases.

Select Database

- ChemIDplus
- HSDB
- TOXLINE
- CCRIS
- DART
- GENETOX
- IRIS
- ITER
- LactMed
- Multi-Database
- TRI
- Haz-Map
- Household Products
- TOXMAP

Search All Databases

Enter term(s) to search all databases.

ammonia
(e.g. asthma air pollution, ibuprofen fever, vinyl chloride)

Search Clear Help

TOXNET Search Options

- Search all databases: Enter term(s) in box above
- Search a specific database: Click database at left
- Database description: Click on the [?]

Env. Health & Toxicology

Select Database

- ChemIDplus
- HSDB
- TOXLINE
- CCRIS
- DART
- GENETOX
- IRIS
- ITER
- LactMed
- Multi-Database
- TRI
- Haz-Map
- Household Products
- TOXMAP

Search All Databases

ammonia Search Clear Help

(e.g. asthma air pollution, ibuprofen fever, vinyl chloride)

References from Biomedical Literature

Database	Description	Records
TOXLINE	Toxicology Literature Online	16563
DART	Developmental Toxicology Literature	285

Chemical, Toxicological, and Environmental Health Data

Database	Description	Records
ChemIDplus	Chemical Identification/Dictionary	1
HSDB	Hazardous Substances Data Bank	925
CCRIS	Chemical Carcinogenesis Information	1
CPDR	Carcinogenic Potency Database	0

Entering search term(s)—You may enter any combination of words, chemical names, and numbers, including Chemical Abstracts Service (CAS) registry numbers. Common “stop words” such as “a,” “an,” “and,” “for,” “the,” and “it” will not be searched. When searching for terms other than chemicals, the system automatically searches for singular and plural forms of the term(s) entered.

Synonym searching—By default the system will search for the exact name, synonyms, and CAS number as derived from ChemIDplus. Select “No” to search only for the exact chemical term or CAS Registry Number entered. In LactMed, the CAS number refers to the parent compound (i.e., not the salt form).

Truncation—The asterisk (*) is the right-handed truncation symbol for any number of characters.

Phrase searching—Search phrases with quotation marks.

Boolean searching—Use the logical operators “AND,” “OR,” and “NOT” to limit a search of two or more terms to specific criteria. In searches with combinations of these operators, “AND” takes precedence, followed by “NOT” and then “OR.” This default precedence may be overridden with the use of parentheses, which may also be nested (i.e., parentheses within parentheses). Examples:

- Pulmonary **AND** edema—retrieves all records with the two words appearing together
- Liver **OR** kidney—retrieves all records containing either of these words (or both of them)
- Carcinoma **NOT** squamous—retrieves records from which one or more terms have been excluded

(e.g. antifreeze kidney failure, chromium compounds, 7718-54-9)

Search Clear Help

For chemicals, add synonyms and CAS numbers to search:

☒ Yes ☐ No

Limits Browse the Index

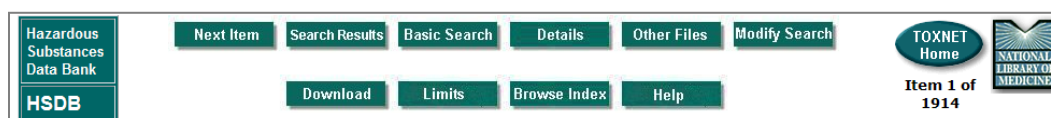
Browse the Index—This feature provides a scannable index of all terms beginning with the search term you entered and the number of records for each term. In the Toxicology Data databases, selectable items indexed are **All Words**, **CAS Registry Number**, and **Chemical Name**. In the Toxicology Literature databases, selectable items indexed are **All Words**, **MeSH Headings/Keywords**, **Authors**, and **CAS Registry Number**.

Search Results Buttons

Buttons on the left of the search results screen allow you to:

Save Checked Items	► Save Checked Items —save items in a set for displaying, sorting, and downloading
Sort	► Sort —sort the entire search results or items saved in a set
Details	► Download —download the entire search results or items save in a set in brief, full, abstract, or tagged format
History	► Modify Search —make changes to the most recent search
Download	► Basic Search —conduct a new search in the same database
Modify Search	► Browse Index —browse all words, CAS Registry Number, chemical name, and in bibliographic databases MeSH headings/keywords and authors
Basic Search	► Go to the Help file for that database
Browse Index	► Go to TOXNET Home
Help	
TOXNET Home	

Navigation Buttons



Buttons at the top of the record screen allow you to:

- Go to the **Next Item** in the search results
- Go back to the **Search Results** screen
- Perform a new **Basic Search** in the same database
- View **Details** of the search
- Display links to **Other Files** (NLM databases) containing information on the substance
- **Modify [your] Search**
- **Download** the record or portions of the record
- Perform a new search in the same database with **Limits** applied
- **Browse [the] Index**
- Go to the **Help** file for that database

ChemIDplus, HSDB, and IRIS



ChemIDplus

ChemIDplus is a free, Web-based search system that provides access to structure and nomenclature authority files used for the identification of chemical substances cited in NLM databases. It contains over 370,000 chemical records, of which over 295,000 include chemical structures. Each record in ChemIDplus represents a single chemical or substance. The ChemIDplus database has two different applications: **ChemIDplus Lite** (for basic searching) and **ChemIDplus Advanced** (for more experienced users).

United States National Library of Medicine

TOXNET
Toxicology Data Network

SIS Home | About Us | Site Map & Search | Contact Us

Env. Health & Toxicology > TOXNET > ChemIDplus Lite

ChemIDplus - Dictionary of over 370,000 chemicals (names, synonyms, and structures). Includes links to NLM and other databases and resources.

Select Database

- ChemIDplus
- HSDB
- TOXLINE
- CCRIS
- DART
- GENETOX
- IRIS
- ITER
- LactMed
- Multi-Database
- TRI
- Haz-Map
- Household Products
- TOXMAP
- TOXNET Home

Search ChemIDplus

Enter the name (e.g. formaldehyde) or registry number (e.g. 50-00-0) to search

Search Clear

Advanced ChemIDplus Search

Provides chemical structure, property, and toxicity searching.

Env. Health & Toxicology

Portal to environmental health and toxicology resources

VISIT SITE

Support Pages

- ▶ Help
- ▶ Fact Sheet
- ▶ Sample Record
- ▶ TOXNET FAQ

Additional Resource

- CPDB

toxnet.nlm.nih.gov

Content

Information in the ChemIDplus database includes:

- Systematic, generic, and trade names
- Synonyms
- CAS registry numbers
- Molecular formulas
- Classification codes
- Chemical structures (ChemIDplus Advanced)

ChemIDplus also provides links to many biomedical resources at NLM and on the Internet for chemicals of interest.

Searching ChemIDplus

Search ChemIDplus by name, synonym, Chemical Abstracts Service (CAS) registry number, molecular formula, classification code, locator code, structure, toxicity, and/or physical properties within two distinct applications:

- **ChemIDplus Lite** (ChemIDplus home page) is designed for simple searching on name or registry number to retrieve basic information about a chemical and provide locator links to other resources and does not require special software applets or plug-ins. The Lite version displays structures, but does not allow drawing or searching on structures.
- **ChemIDplus Advanced** (see below) is designed for more advanced searching on any combination of name, registry number, molecular formula, classification code, locator code, toxicity, physical property, structure, or molecular weight. In addition, ChemIDplus Advanced allows users to draw their own structures and perform similarity and substructure searches.

The screenshot shows the ChemIDplus Advanced search interface. The header includes the NLM logo and navigation links. The main search area is divided into two columns. The left column contains search filters: Substance Identification, Toxicity, Physical Properties, and Locator Codes. The right column contains Structure search options and Molecular Weight. Annotations with arrows point to specific fields: 'Enter basic search term' points to the Substance Identification Name/Synonym field; 'Qualify a toxicity search' points to the Toxicity filters; 'Select and qualify a physical property' points to the Physical Properties filters; 'Click in box to draw structures' points to the Structure search options; and 'Select type of structure search' points to the Structure Search Options.

United States National Library of Medicine **ChemIDplus Advanced**

News [SIS Home](#) | [Site](#) | [About Us](#) | [Contact](#) | [Help](#)
[Env. Health & Toxicology](#) | [TOXNET](#) | [ChemIDplus Lite](#) | [Advanced](#)

Search Clear History Help Display 5 results

Substance Identification ⓘ

Name/Synonym [] Equals []
 Data is available for 382,013 records.

Toxicity ⓘ

Test: (any) [] between [] (mg/kg or ppm)
 Species: (any) []
 Route: (any) []
 Effect: (any) []
 Toxicity data is available for 139,354 records.

Physical Properties ⓘ

Melting Point []
 between [] []
 Either [] Measurement Type []
 Physical property data was provided by [Syracuse Research Corporation](#)
 and is available for 25,461 records.

Locator Codes ⓘ

(any) []
 AND []
 (any) []

Structure ⓘ

View Help []
 Powered by [ChemAxon Marvin](#)

Structure Search Options ⓘ

☐ Substructure Search
☒ Similarity Search [80] %
☐ Exact (parent only)
☐ Flex (parent, salts, mixture) **NEW**
☐ Flexplus (parent, all variations) **NEW**

Display structures using ⓘ

☒ Marvin ☐ Chime [Change](#)
 Structure data is available for 290,035 records.

Molecular Weight ⓘ

between [] []
 Molecular weight data is available for 290,035 records.

Search Clear History Help Display 5 results

Annotations:

- Enter basic search term → Substance Identification Name/Synonym field
- Qualify a toxicity search → Toxicity filters
- Select and qualify a physical property → Physical Properties filters
- Click in box to draw structures → Structure search options
- Select type of structure search → Structure Search Options

Search Results

If you searched ChemIDplus Lite, the system displays the record with basic information for the chemical, including links to additional information. If multiple records were retrieved, a list of names would be shown. Following is the ChemIDplus Lite record for *diazepam*. Use buttons on the left to retrieve categories of detailed information such as Names & Synonyms, Formulas, Classification Codes, Registry Numbers, and Notes. In the center of the page, lists of “locators” provide links to other resources in three categories:

- **File Locators**—point to a set of NLM associated databases
- **Internet Locators**—point to a set of resources with biomedical data of interest for the chemical
- **SuperList Locators**—point to a set of regulatory and scientific lists that contain information about the chemical

Record for Diazepam (ChemIDplus Lite)

Basic Information

- Full Record
- Names & Synonyms**
- Formulas
- Classification Codes
- Registry Numbers
- Notes
- Toxicity
- Physical Properties

Diazepam [USAN:INN:BAN:JAN]
RN: 439-14-5

For more information about this substance, you may select from the links below.

File Locator

CCRIS
[ClinicalTrials.gov](#)
 DART
[DailyMed](#)
[DrugPortal](#)
 EINECS
 EMLC
[GENETOX](#)
 HSDB
[LactMed](#)
 MeSH
[MeSH Heading](#)
[MedlinePlusAll](#)
[MedlinePlusDrug](#)
[Pillbox](#)
[PubChem](#)
[PubMed](#)
[PubMed AIDS](#)
[PubMed Cancer](#)
[PubMed Toxicology](#)
 RTECS
 TOXLINE

Internet Locator

CAMEO
 CPDB
 CTD
 ChEBI
[DrugDigest](#)
[Drugs@FDA](#)
[EPA Envirofacts](#)
[EPA PPIIS](#)
[EPA SRS](#)
[NIAID ChemDB](#)
[NIST WebBook](#)
[NJ-HSEFS](#)
[NTP DBS](#)
[SRC DATALOG](#)
[USA.gov](#)

Superlist Locator

CA65
 DEA
 DSL
 IARC
 MA
[TSCAINV](#)

1 NCI Chem Carcino Res Info Sys
 1 NIH ClinicalTrials.gov
 1 Developmental and Reprod.Tox.
 1 NLM/FDA Drug Labelling
 1 NLM Drug Information Portal
 1 EU Inv of Exist. Comm. Chem Sub
 1 Env. Mutagen Info. Center
 1 EPA GENETIC TOXicology
 1 Hazardous Substances Data Bank
 1 Drugs and Lactation Database
 1 Medical Subject Headings File
 1 Medical Subject Headings
 1 Search Consumer Health Info
 1 Consumer Drug Information
 1 Drug Identification and Image Display
 1 PubChem
 1 Biomedical Citations From PubMed
 1 AIDS Citations from PubMed
 1 Cancer Citations from PubMed
 1 Toxicology Citations From PubMed
 1 Reg. of Toxic Eff. of Chem. Sub.
 1 NLM TOXLINE on TOXNET

1 NOAA CAMEO Chemicals
 1 Carcinogenic Potency Database
 1 Comparative Toxicogenomics Database
 1 Chem Entities of Biological Interest
 1 Drug Digest
 1 FDA Drug Database
 1 EPA Master Chemical Integrator
 1 EPA Pest. Prod. Info. System
 1 EPA Substance Registry System
 1 NIAID Chemical Database
 1 NIST Chemistry WebBook
 1 New Jersey Haz. Sub. Fact Sheets
 1 NTP Database Search
 1 Syracuse Res. Corp. DATALOG
 1 USA.gov Search Engine

1 California Proposition 65 List
 1 DEA Controlled Substances
 1 Domestic Sub. List of Canada
 1 Int. Agency for Res. on Cancer
 1 Massachusetts Right-to-know Sub.
 1 EPA Chem. Sub. Inventory

Search Navigation

Main Query Page
[Advanced ChemIDplus Search](#)

Other names used for chemical

Links to PubMed articles

File Locator(s)

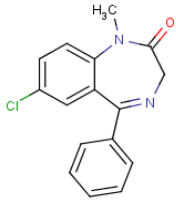
Internet Locator(s)

Superlist Locator(s)

The advanced record shows the same locator lists and basic information as the ChemIDplus Lite record with the addition of structures including structure navigation buttons.

Record for Diazepam (ChemIDplus Advanced)

NAME: Diazepam [USAN:INN:BAN:JAN]
RN: 439-14-5



MW: 284.7447
[Enlarge Structure](#)

Click to enlarge and manipulate structure

Basic Information

- Full Record
- Structure**
- Names & Synonyms
- Formulas
- Classification Codes
- Registry Numbers
- Notes
- Toxicity
- Physical Properties

For more information about this substance, you may select from the the links below.

File Locator

[CCRIS](#)
[ClinicalTrials.gov](#)
[DART](#)
[DailyMed](#)
[DrugPortal](#)
[EINECS](#)
[EMIC](#)
[GENETOX](#)
[HSDB](#)
[LactMed](#)
[MeSH](#)
[MeSH Heading](#)
[MedlinePlusAll](#)
[MedlinePlusDrug](#)
[Pillbox](#)
[PubChem](#)
[PubMed](#)
[PubMed AIDS](#)
[PubMed Cancer](#)
[PubMed Toxicology](#)
[RTECS](#)
[TOXLINE](#)

Internet Locator

[CAMEO](#)
[CPDB](#)
[CTD](#)
[ChEBI](#)
[DrugDigest](#)
[Drugs@FDA](#)
[EPA Envirofacts](#)
[EPA PPIS](#)
[EPA SRS](#)
[NIAID ChemDB](#)
[NIST WebBook](#)
[NJ-HSFS](#)

- [NCI Chem Carcino Res Info Sys](#)
- [NIH ClinicalTrials.gov](#)
- [Developmental and Reprod.Tox.](#)
- [NLM/FDA Drug Labelling](#)
- [NLM Drug Information Portal](#)
- [EU Inv of Exist. Comm. Chem Sub](#)
- [Env. Mutagen Info. Center](#)
- [EPA GENetic TOXicology](#)
- [Hazardous Substances Data Bank](#)
- [Drugs and Lactation Database](#)
- [Medical Subject Headings File](#)
- [Medical Subject Headings](#)
- [Search Consumer Health Info](#)
- [Consumer Drug Information](#)
- [Drug Identification and Image Display](#)
- [PubChem](#)
- [Biomedical Citations From PubMed](#)
- [AIDS Citations from PubMed](#)
- [Cancer Citations from PubMed](#)
- [Toxicology Citations From PubMed](#)
- [Reg. of Toxic Eff. of Chem. Sub.](#)
- [NLM TOXLINE on TOXNET](#)

Search Navigation

- Start New Query
- Modify Query
- Show Query
- Search History
- Structure Similarity Search
- Structure Salt/Parent Search
- Transfer Structure
- Basic ChemIDplus Search

Structure navigation buttons

Additional Resources

For further information, we recommend these additional resources:

- ▶ [ChemIDplus Fact Sheet](#)
www.nlm.nih.gov/pubs/factsheets/chemidplusfs.html
- ▶ [TOXNET Manual](#)
sis.nlm.nih.gov/enviro/manuals.html



ChemIDplus Search Exercises

Search Example: Locate the record for *benzene*. See what other NLM databases contain information on *benzene*.

Suggested Solution:

- ▶ Go to toxnet.nlm.nih.gov
- ▶ Click **ChemIDplus** in the **Select Database** column
- ▶ Type **benzene** in the search box
- ▶ Click the **Search** button

- ▶ Review the list of other NLM databases (under **File Locator**) that contain information on benzene
- ▶ Click the **Main Query Page** button at the right to prepare for a new search

Exercise 1: Find the lowest toxic dose tested (TDLo) for *phenobarbital* in infants.

Suggested solution:

- | | |
|-------|--|
| Type | phenobarbital in the search box |
| Click | the Search button |
| Click | Phenobarbital [USAN:INN:JAN] |
| Click | the Toxicity button on the left of the page |

- | | |
|--------|--|
| Review | the chart and close the window |
| Click | the Main Query Page button at the right to prepare for a new search |

Exercise 2: Locate the record for *formaldehyde* and link to the Internet Locator ATSDR ToxFAQs. Then link to the NIOSH Pocket Guide. Use the Classification Code button to find the Overall Carcinogenic Evaluation classification and the source for the rating.

Suggested solution:

- | | |
|--------|--|
| Type | formaldehyde in the search box |
| Click | the Search button |
| Click | ATSDR ToxFAQs under Internet Locator |
| Review | the ToxFAQs for Formaldehyde in the ATSDR window and close the window |
| Click | NIOSH Pocket Guide under Internet Locator |
| Review | the information and close the CDC window |
| Click | the Classification Codes button on the left of the page |
| Review | the Superlist Classification Code list to find “Overall Carcinogenic Evaluation: Group 1” |
| Click | the information icon (i) next to “Overall Carcinogenic Evaluation: Group 1” to find the data source – IARC (International Agency for Research on Cancer) |
| Close | the Data Source Information window, then the Classification Codes window and return to the Formaldehyde [USAN] record |
| Click | the Main Query Page button at the top right to prepare for a new search |

Exercise 3: Using ChemIDplus Advanced to perform a structure similarity search on *methyl parathion*.

Suggested Solution:

- | | |
|--------|--|
| Click | the Advanced ChemIDplus Search button |
| Type | methyl parathion in the substance identification box |
| Click | the Search button |
| Click | the Structure Similarity Search button at the right |
| Review | the results |
| Click | the TOXNET Home button at the left of the page to prepare for the next search |

HSDB

HSDB is a comprehensive toxicology data file on the NLM TOXNET system. It contains data on over 5,000 chemicals, organized into individual records—the average record is approximately 25 printed pages. Content is peer-reviewed by the Scientific Review Panel, a committee of experts in the major subject areas within the data bank's scope. HSDB is enhanced with information on human exposure, industrial hygiene, emergency handling procedures, environmental fate, regulatory requirements, and related areas.

toxnet.nlm.nih.gov

Searching HSDB

Search HSDB by chemical or other name, chemical name fragment, Chemical Abstracts Service (CAS) Registry Number, and/or subject terms (basic searching). By default, the system searches for synonyms and CAS numbers of chemicals. Use truncation (*), Boolean operators (AND, OR, NOT), phrase searching, nested parentheses, limits, and index browsing to refine your search results.

Click the **Limits** button on the home page to search

- Exact words, singular & plural forms, or word variants
- All the words, any of the words, or as a phrase
- In specific fields or categories of fields

Click the **Browse the Index** button on the home page to search a list of index terms related to the search term entered and the number of records containing that term. Select the record(s) you want to view by clicking the appropriate box in the “Check to Select” column and clicking the **Select** button. Scan the index above or below the original display by clicking the **Up** or **Down** button.

Browse HSDB

(e.g. antifreeze kidney failure, chromium compounds, 7718-54-9)

Search
Clear
Help

☒ All Words
☐ CAS Registry Number
☐ Chemical Name

Return to Basic Search

HSDB Browse Results

SIS Home | About Us | Site Map & Search | Contact Us
Env. Health & Toxicology | TOXNET | HSDB

Search
Clear
Return to Basic Search

☒ All Words
 ☐ CAS Registry Number
 ☐ Chemical Name

Check one or more text words. Then click on SELECT.

Start of Text Word Browse: **benzene**

Up
Down
Select

Check to Select	Number of Records	Index Term
<input type="checkbox"/>	1857	benzene
<input type="checkbox"/>	4	benzeneacetamide
<input type="checkbox"/>	7	benzeneacetate

Search Results

Your initial retrieval is displayed as a list of substance names in blue and their CAS Registry Numbers. Substances are listed in **relevancy ranked order**. Relevancy ranking is based on the number of individual search terms occurring in a document, the number of times each search term occurs in a document, the rarity of the search terms within the database, and the nearness of search terms to each other. Records containing combinations of search terms tend to be ranked higher than records with isolated occurrences of search terms.

When searching for a chemical, the initial matching chemical record (the “primary record”) may be followed by additional chemical records that contain the chemical name or search term you entered.

Save Checked Items

Sort

Details

History

Download

Modify Search

Basic Search

Browse Index

Help

TOXNET Home

TOXNET
 Toxicology Data Network

HSDB Search Results

SIS Home | About Us | Site Map & Search | Contact Us
Env. Health & Toxicology | TOXNET | HSDB

Search
Clear
Limits

For chemicals, add synonyms and CAS numbers to search: ☒ Yes ☐ No

Items 1 through 20 of 1914 Page 1 of 96 to page

Substance Names are sorted in relevancy ranked order.

Select Record

Substance Name

The following is the primary record for the chemical. All of the query terms were found.

☐

BENZENE
 71-43-2

The following 1913 records contain one or more of the requested chemical name(s) and all of the query terms anywhere in the record.

☐

HYDROQUINONE
 123-31-9

☐

TOLUENE
 108-88-3

Primary Record

Other Chemical Records

Click on a substance name on the search results screen to retrieve the record for that substance. The **Record** screen is organized into three sections:

1. Navigation buttons at the top of the screen allow you to link to **Other Files** (NLM databases), modify your search (**Modify Search**), **Download**, return to the **Basic Search** screen, and more.
2. A **Table of Contents** in the left frame allows you to choose categories and fields for display.
3. Chemical data is shown in the right frame. Your search term(s) appear(s) in red.

Record Screen

If you click the primary record, the system displays the **Human Health Effects**. If you click a different chemical record, or if your search was for a term other than a chemical, the system will display the sections of the record best matching your query terms (**Best Sections**), those where the chemical search term(s) appear(s) with greatest frequency.

Additional Resources

For further information, we recommend these additional resources:

- [HSDB Skill Kit](http://www.nlm.nih.gov/pubs/techbull/ma07/ma07_hsdb_skill_kit.html)
www.nlm.nih.gov/pubs/techbull/ma07/ma07_hsdb_skill_kit.html
- [HSDB Animated Tutorial](http://sis.nlm.nih.gov/enviro/captivate/basicsearchinghsdb_skin.swf)
sis.nlm.nih.gov/enviro/captivate/basicsearchinghsdb_skin.swf

HSDB Limits Search Fields

The Limits feature allows you to specify a particular field or category of fields to search. By default, the system will search all fields in all categories. To see all fields within a specific category, click the “+” beside that category.

Search Fields in 16 Categories

Search in fields:
(If no box is checked, all fields will be searched.)

Contract all categories ☐
Expand all categories ☐

- ☐ Substance Identification
- ☐ Human Health Effects
- ☐ Emergency Medical Treatment
- ☐ Animal Toxicity Studies
- ☐ Metabolism/Pharmacokinetics
- ☐ Pharmacology
- ☐ Environmental Fate & Exposure
- ☐ Environmental Standards & Regulations
- ☐ Chemical/Physical Properties
- ☐ Chemical Safety & Handling
- ☐ Occupational Exposure Standards
- ☐ Manufacturing/Use Information
- ☐ Laboratory Methods
- ☐ Special References
- ☐ Synonyms and Identifiers
- ☐ Administrative Information

Contract/Expand All Categories

Expanded Categories (All Fields)

Substance Identification

- Chemical Names
- CAS Registry Number

Human Health Effects

- Toxicity Summary
- Evidence for Carcinogenicity
- Human Toxicity Excerpts
- Human Toxicity Values
- Skin, Eye and Respiratory Irritations
- Drug Warnings
- Medical Surveillance]
- Populations at Special Risk
- Probable Routes of Human Exposure
- Body Burden
- Average Daily Intake
- Minimum Fatal Dose Level

Emergency Medical Treatment

- Emergency Medical Treatment
- Antidote and Emergency Treatment

Animal Toxicity Studies

- Toxicity Summary
- Evidence for Carcinogenicity

Non-Human Toxicity Excerpts

- Ecotoxicity Excerpts
- National Toxicology Program Studies
- Non-Human Toxicity Values
- Ecotoxicity Values
- Ongoing Test Status
- TSCA Test Submissions

Metabolism/Pharmacokinetics

- Metabolism/Metabolites
- Absorption, Distribution & Excretion
- Biological Half-Life
- Mechanism of Action
- Interactions















Pharmacology

- Therapeutic Uses
- Drug Warnings
- Interactions
- Drug Idiosyncrasies
- Drug Tolerance
- Minimum Fatal Dose Level
- Maximum Drug Dose
- Biorecessity








Environmental Fate & Exposure

















-  Environmental Fate/Exposure Summary
-  Probable Routes of Human Exposure
-  Body Burden
-  Average Daily Intake
-  Natural Pollution Sources
-  Artificial Pollution Sources
-  Environmental Fate
-  Environmental Biodegradation
-  Environmental Abiotic Degradation
-  Environmental Bioconcentration
-  Soil Adsorption/Mobility
-  Volatilization from Water/Soil
-  Environmental Water Concentrations
-  Effluent Concentrations
-  Sediment/Soil Concentrations
-  Atmospheric Concentrations
-  Food Survey Values
-  Plant Concentrations
-  Fish/Seafood Concentrations
-  Animal Concentrations
-  Milk Concentrations
-  Other Environmental Concentrations

Environmental Standards & Regulations













-  FIFRA Requirements
-  Acceptable Daily Intakes
-  TSCA Requirements
-  CERCLA Reportable Quantities
-  RCRA Requirements
-  Atmospheric Standards
-  Clean Water Act Requirements
-  Federal Drinking Water Standards
-  Federal Drinking Water Guidelines
-  State Drinking Water Standards
-  State Drinking Water Guidelines
-  Soil Standards
-  FDA Requirements
-  Allowable Tolerances

Chemical/Physical Properties






-  Molecular Formula
-  Molecular Weight
-  Color/Form
-  Odor
-  Taste
-  Boiling Point
-  Melting Point

-  Corrosivity
-  Critical Temperature & Pressure
-  Density/Specific Gravity
-  Dissociation Constants
-  Heat of Combustion
-  Heat of Vaporization
-  Octanol/Water Partition Coefficient
-  pH
-  Solubilities
-  Spectral Properties
-  Surface Tension
-  Vapor Density
-  Vapor Pressure
-  Relative Evaporation Rate
-  Viscosity
-  Other Chemical/Physical Properties











Chemical Safety & Handling

-  Hazards Summary
-  DOT Emergency Guidelines
-  Odor Threshold
-  Skin, Eye and Respiratory Irritations
-  Fire Potential
-  NFPA Hazard Classification
-  Flammable Limits
-  Flash Point
-  Autoignition Temperature
-  Fire Fighting Procedures
-  Toxic Combustion Products
-  Firefighting Hazards
-  Explosive Limits & Potential
-  Hazardous Reactivities & Incompatibilities
-  Hazardous Decomposition
-  Hazardous Polymerization
-  Other Hazardous Reaction
-  Prior History of Accidents
-  Immediately Dangerous to Life or Health
-  Protective Equipment & Clothing
-  Preventive Measures
-  Stability/Shelf Life
-  Shipment Methods and Regulations
-  Storage Conditions
-  Cleanup Methods
-  Disposal Methods
-  Radiation Limits & Potential




Occupational Exposure Standards

-  OSHA Standards
-  Threshold Limit Values
-  NIOSH Recommendations
-  Immediately Dangerous to Life or Health
-  Other Occupational Permissible Levels


Manufacturing/Use Information

-  Major Uses
-  Manufacturers
-  Methods of Manufacturing
-  General Manufacturing Information
-  Formulations/Preparations
-  Impurities
-  Consumption Patterns
-  U. S. Production
-  U. S. Import
-  U. S. Exports










Laboratory Methods

-  Clinical Laboratory Methods
-  Analytic Laboratory Methods
-  Sampling Procedures



Special References

-  Special Reports

Synonyms and Identifiers

-  Related HSDB Records
-  Synonyms
-  Associated Chemicals
-  Formulations/Preparations
-  Shipping Name/ Number
DOT/UN/NA/IMO
-  Standard Transportation Number
-  EPA Hazardous Waste Number
-  Wiswesser Line Notation
-  RTECS Number

Administrative Information

-  Hazardous Substances Databank
Number
-  Last Review Date



HSDB Search Exercises

Search Example: Locate information on the human health effects of *Bisphenol A*.

Suggested Solution:

- ▶ Go to toxnet.nlm.nih.gov
- ▶ Click **HSDB** in the **Select Database** column
- ▶ Type **bisphenol a** in the search box
- ▶ Click the **Search** button

- ▶ Click the primary record **BISPENOL A**

- ▶ Review the **Human Health Effects** information in the right frame
- ▶ Click the **Basic Search** button at the top of the page to prepare for the next search

Exercise 1: What current information is available on how *ethylene glycol* behaves in the environment based on the chemical's physical properties?

Suggested Solution:

- | | |
|--------|---|
| Type | ethylene glycol in the search box |
| Click | the Search button |
| Click | ETHYLENE GLYCOL |
| Scroll | down to the <u>Environmental Fate & Exposure</u> section in the Table of Contents |
| Click | a subsection of your choice |
| Review | the information |
| Click | the Basic Search button at the top of the page to prepare for the next search |

Exercise 2: What is the average daily intake of *mercury*?

Suggested Solution:

- | | |
|--------|--|
| Type | mercury in the search box |
| Click | the Search button |
| Click | MERCURY, ELEMENTAL |
| Click | <u>Average Daily Intake</u> under <u>Human Health Effects</u> in the Table of Contents |
| Review | the information retrieved |
| Click | the Basic Search button at the top of the page to prepare for the next search |

Exercise 3: Using the CAS Registry Number 7439-95-4, find the FDA requirements of this chemical.

Suggested Solution:

- | | |
|--------|---|
| Type | 7439-95-4 in the search box |
| Click | the Search button |
| Click | MAGNESIUM ELEMENTAL - the primary record |
| Scroll | down to the <u>Environmental Standards & Regulations</u> section in the Table of Contents |
| Click | <u>FDA Requirements</u> |
| Review | the information |
| Click | the Basic Search button at the top of the page to prepare for the next search |

Exercise 4: Using the limits feature, locate how many pesticide chemicals records contain average daily intake information.

Suggested Solution:

- | | |
|--------|---|
| Click | the Limits button at the bottom of the Search HSDB frame |
| Click | the “+” icon to expand the <u>Human Health Effects</u> category |
| Click | to check the box next to <u>Average Daily Intake</u> |
| Type | pesticide in the search box |
| Select | “exact words” and “the phrase” below the search box |
| Click | the Search button |
| Review | the list of chemicals |
| Click | the TOXNET Home button at the top of the page to prepare for the next search |

IRIS

The **Integrated Risk Information System (IRIS)** contains data for over 600 chemicals, compiled by the Environmental Protection Agency (EPA), in support of human health risk assessment. Overall, IRIS focuses on the human health effects that may result from exposure to various substances found in the environment with data on hazard identification and dose-response assessments.

The TOXNET Databases

TOXNET
Toxicology Data Network

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Env. Health & Toxicology | TOXNET | IRIS

Integrated Risk Information System (IRIS) - Hazard identification and dose-response assessments for over 500 chemicals.

Select Database

- ChemIDplus
- HSDB
- TOXLINE
- CCRIS
- DART
- GENETOX
- IRIS**
- ITER
- LactMed
- Multi-Database
- TRI
- Haz-Map
- Household Products
- TOXMAP
- TOXNET Home

Search IRIS

(e.g. arsenic blackfoot disease, lead, 78-00-2)

Search Clear Help

For chemicals, add synonyms and CAS numbers to search:
☒ Yes ☐ No

Limits Browse the Index

Env. Health & Toxicology

Portal to environmental health and toxicology resources

VISIT SITE

Support Pages

- Help
- Fact Sheet
- Sample Record
- EPA Disclaimer
- TOXNET FAQ

toxnet.nlm.nih.gov

IRIS data are reviewed by work groups of EPA scientists and represent EPA consensus. Key data provided in IRIS include EPA carcinogen classifications, unit risks, slope factors, oral reference doses, and inhalation reference concentrations.

Searching IRIS

Search IRIS by chemical or other name, chemical name fragment, Chemical Abstracts Service (CAS) Registry Number (RN), and/or subject terms. Search results, displayed in relevancy ranked order, can easily be viewed, printed, or downloaded.

Use truncation (*), Boolean operators (AND, OR, NOT), phrase searching, nested parentheses, limits, and index browsing to refine your search results.

Click the **Limits** button on the home page to search:

Search IRIS

Search Clear Help

Add chemical synonyms and CAS numbers to search: ☒ Yes ☐ No

Search: ☐ exact words ☒ singular & plural forms ☐ word variants

Search records with: ☐ the phrase ☒ all words ☐ any words

Search in fields: (If no box is checked, all fields will be searched.) Contract all categories Expand all categories

- ☐ Substance Identification
- ☐ I. Chronic Health Hazard Assessment for Noncarcinogenic Effects
- ☐ II. Carcinogenicity Assessment for Lifetime Exposure

Search Browse the Index

- ▶ Exact words, singular & plural forms, or word variants
- ▶ Records with the phrase, all words, or any words
- ▶ In specific fields or categories of fields—Click the plus sign (+) to the left of a category to show all fields in that category. Use the (-) and (□) buttons above and to the right of the list of categories to contract or expand all categories.

With the **Browse the Index** feature, the system returns a list of index terms related to the search term entered. Select one or more index terms and click the **Select** button for the search results.

Browse IRIS

(e.g. arsenic blackfoot disease, lead, 78-00-2)

Search
Clear
Help

☒ All Words

☐ CAS Registry Number

☐ Chemical Name

Return to Basic Search

Search
Clear
Return to Basic Search

☒ All Words
 ☐ CAS Registry Number
 ☐ Chemical Name

Check one or more text words. Then click on SELECT.

Start of Text Word Browse: *arsenic*

Up
Down
Select

Check to Select	Number of Records	Index Term
<input type="checkbox"/>	6	arsenic
<input type="checkbox"/>	1	arsenic*
<input type="checkbox"/>	1	arsenical
<input type="checkbox"/>	1	arsenicism
<input type="checkbox"/>	1	arsenite

Search Results

Search results are relevancy ranked. Relevancy ranking is based on the number of individual search terms occurring in a document, the number of times each search term occurs in a document, the rarity of the search terms within the database, and the nearness of search terms to each other. Records containing combinations of search terms tend to be ranked higher than records with isolated occurrences of search terms.

The search results screen is organized into three sections:

1. Navigation buttons at the top of the screen allow you to link to **Other Files** (NLM databases), **Modify Search**, **Download**, return to the **Basic Search** screen, and more.
2. A **Table of Contents** in the left frame allows you to choose categories and fields for display.
3. Chemical Data is shown in the right frame.

The screenshot shows the IRIS web interface for Benzene (CASRN 71-43-2). The top navigation bar (1) includes buttons for 'Next Item', 'Search Results', 'Basic Search', 'Details', 'Other Files', 'Modify Search', 'Download', 'Limits', 'Browse Index', and 'Help'. The left sidebar (2) contains a 'Table of Contents' for 'Benzene' with expandable categories like 'Full Record', 'Status', 'Substance Identification', 'CAS Registry Number', 'Chemical Health Hazard Assessment', etc. The right main content area (3) displays detailed information for 'Benzene', including its status, file first on-line date (03/01/1988), category (section), status, last revised date, and substance identification.

When searching for a chemical, your retrieval may include other chemical records in addition to the initial matching chemical record (the “primary” record). These additional records appear if they contain the chemical name or search term. Click any of these non-primary chemicals on the Search Results screen to display the Best Sections, those where the chemical search term(s) appear(s) with greatest frequency. The term(s) searched appear(s) in red.

The screenshot displays the IRIS Search Results interface. On the left, a sidebar contains navigation links: Save Checked Items, Sort, Details, History, Download, Modify Search, Basic Search, Browse Index, Help, and TOXNET Home. The main search area shows the query 'benzene' with buttons for Search, Clear, and Limits. Below the search bar, it indicates 'Items 1 through 20 of 23' and 'Substance Names are sorted in relevancy ranked order'. A list of search results is shown, with 'Benzene' (71-43-2) as the primary record. Other results include '2-Methylphenol' (95-48-7) and 'Benzotrichloride' (90-03-7), which are circled in red. The detailed view of '2-Methylphenol' (CASRN 95-48-7) is shown on the right. It includes a 'Table of Contents' with sections like FULL RECORD, BEST SECTIONS, Substance Identification, and CAS Registry Number. The 'Best Sections' are listed, and the 'II.A.3. Animal Carcinogenicity Data' section is expanded, showing text with 'benzene' highlighted in red. The text describes a study by Brouwer and Borch (1959) on female Sprague-Dawley rats, where a single dermal application of 25 µL of 0.3% dimethylbenzanthracene (DMBA) was followed by weekly applications of 25 µL of 20% o-, m-, or p-cresol for 12 weeks. The study found that the benzene group (benzene) showed no mortality or evidence of skin papillomas, while the benzene group (benzene) showed a higher incidence of skin papillomas.

Additional Resources

For further information, we recommend these additional resources:

- ▶ [IRIS Fact Sheet:](http://www.nlm.nih.gov/pubs/factsheets/irisfs.html)
www.nlm.nih.gov/pubs/factsheets/irisfs.html
- ▶ [EPA IRIS Web Site:](http://epa.gov/NCEA/iris)
epa.gov/NCEA/iris



IRIS Search Exercises

Search Example: Locate the full record for *selenium*.

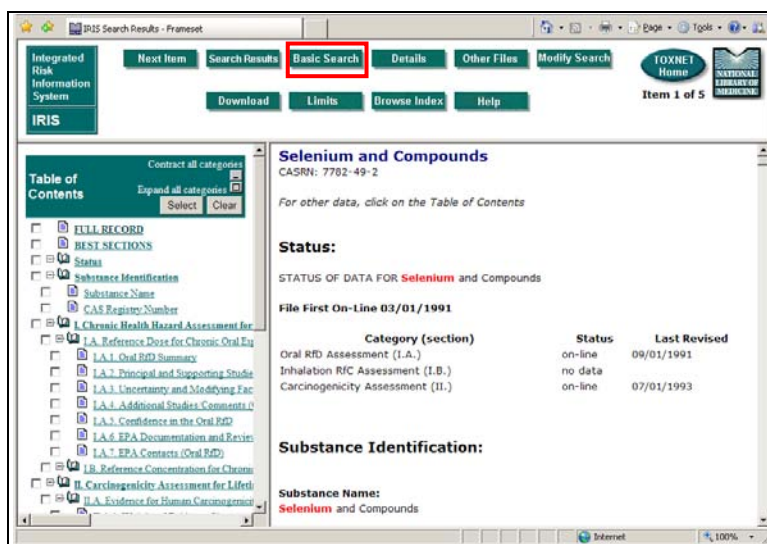
Suggested Solution:

- ▶ Go to toxnet.nlm.nih.gov
- ▶ Click **IRIS** in the **Select Database** column
- ▶ Type **selenium** in the search box
- ▶ Click the **Search** button

- ▶ Click **Selenium and Compounds**

- ▶ Click **FULL RECORD** in the **Table of Contents**

- ▶ Review the information in the right frame
- ▶ Click the **Basic Search** button at the top of the page to prepare for the next search




Exercise 1: How does the U.S. Environmental Protection Agency characterize the carcinogenicity of *methylmercury*?

Suggested Solution:

- Type **methylmercury** in the search box
- Click the **Search** button
- Click Methylmercury (MeHg)
- Click **II.A. Evidence for Human Carcinogenicity** under **Carcinogenicity Assessment for Lifetime Exposure** in the **Table of Contents**
- Review the information in the right frame
- Click the **Basic Search** button at the top of the page to prepare for the next search

Exercise 2: What is the Inhalation Reference Concentration (RfC) of *ammonia*? (Note: The RfC is a non-carcinogenic risk assessment parameter) Also, view the Download options available.

Suggested Solution:

- Type **ammonia** in the search box
- Click the **Search** button
- Click **Ammonia**
- Click the  icon to expand the **Chronic Health Hazard Assessment for Noncarcinogenic Effects** category in the **Table of Contents**
- Click **I.B. Reference Concentration for Chronic Inhalation Exposure (RfC)**
- Review the information in the right frame

- Click the **Download** button at the top of the page
- Review the Custom Formats
- Close the pop-up window
- Click the **TOXNET Home** button to prepare for a new session

This page is intentionally blank.

CCRIS, GENE-TOX, and ITER



CCRIS

CCRIS (Chemical Carcinogenesis Research Information System) is a toxicology data file of the NLM's TOXNET®. It is a scientifically evaluated and fully referenced data bank, developed and maintained by the National Cancer Institute (NCI). It contains over 9,000 chemical records with carcinogenicity, mutagenicity, tumor promotion, and tumor inhibition test results. Data are derived from studies cited in primary journals, current awareness tools, NCI reports, and other special sources. Test results have been reviewed by experts in carcinogenesis and mutagenesis.

toxnet.nlm.nih.gov

Searching CCRIS

Search CCRIS by any combination of words, chemical names, and numbers, including Chemical Abstracts Service (CAS) Registry Numbers (RN). By default, the system adds synonyms and CAS numbers to chemical searches.

Use truncation (*), Boolean operators (AND, OR, NOT), nested parentheses, limits, and index browsing to refine your search results.

Click the **Limits** button on the home page to search:

- ▶ Exact words, singular & plural forms, or word variants
- ▶ Records with the phrase, all words, or any words
- ▶ In specific fields or categories of fields—Click the plus sign (+) to the left of a category to show all fields in that category. Use the (-) and (□) buttons above and to the right of the list of categories to contract or expand all categories.

With the **Browse the Index** feature, the system returns a list of index terms related to the search term entered and the number of records containing that term. Select one or more index terms in the **Check to Select** column and click the **Select** button for the search results. Scan the index above or below the original display by clicking the **Up** or **Down** button.

Browse CCRIS

(e.g. Ames salmonella positive, nickel, 59978-65-3)

Search
Clear
Help

☒ All Words
☐ CAS Registry Number
☐ Chemical Name

Return to Basic Search

Search
Clear

Return to Basic Search

☒ All Words ☐ CAS Registry Number ☐ Chemical Name

Check one or more text words. Then click on SELECT.

Start of Text Word Browse: *chloroform*

Up
Down
Select

Check to Select	Number of Records	Index Term
<input type="checkbox"/>	3	chloroform
<input type="checkbox"/>	2	chloroformate
<input type="checkbox"/>	1	chlorogenic
<input type="checkbox"/>	1	chloroisopropyl

CCRIS Search Results

Your initial retrieval is displayed as a list of substance names in blue and their CAS Registry Numbers.

CCRIS Search Results
Env. Health & Toxicology TOXNET CCRIS

Search
Clear
Limits

For chemicals, add synonyms and CAS numbers to search: ☒ Yes ☐ No

Save Checked Items

Sort

Details

History

Download

Modify Search

Basic Search

Browse Index

Help

TOXNET Home

Select Record
Substance Name

Items 1 through 3 of 3

Substance Names are sorted in *relevancy ranked* order.

The following is the primary record for the chemical. All of the query terms were found.

1
CHLOROFORM

67-66-3

The following 2 records contain one or more of the requested chemical name(s) and all of the query terms anywhere in the record.

2
P-ARAMID

24936-64-5

3
ROTENONE

63-79-4

Substances are listed in **relevancy ranked order**—based on the number of individual search terms occurring in a document, the number of times each search term occurs in a document, the rarity of the search terms within the database, and the nearness of search terms to each other. Records containing combinations of search terms tend to be ranked higher than records with isolated occurrences of search terms. Click the substance name to retrieve the record for that substance.

The **Record** screen is organized into three sections:

1. Navigation buttons at the top of the screen allow you to link to **Other Files** (NLM databases), **Modify Search**, **Download**, return to the **Basic Search** screen, and more.
2. A **Table of Contents** in the left frame allows you to choose categories and fields for display.

[Next Item](#)
[Search Results](#)
[Basic Search](#)
[Details](#)
[Other Files](#)
[Modify Search](#)

[Download](#)
[Limits](#)
[Browse Index](#)
[Help](#)

[TOXNET Home](#)
Item 1 of 3

CCRIS

Table of Contents

Expand all categories

Select Clear

- ☒ FULL RECORD
- ☐ Substance Identification
 - ☐ Substance Name
 - ☐ CAS Registry Number
 - ☐ Major Use
- ☐ Data Type
- ☐ Studies Data
 - ☐ Carcinogenicity Studies
 - ☐ Mutagenicity Studies
 - ☐ Tumor Inhibition Studies
- ☐ Administrative Information
- ☐ CCRIS Record Number

CHLOROFORM
CASRN: 67-66-3

For other data, click on the Table of Contents

Substance Identification:

Substance Name: CHLOROFORM

CAS Registry Number: 67-66-3

Major Use: INTERMEDIATES, SOLVENTS

3. Chemical Data is shown in the right frame.

When searching for a chemical, your retrieval may include other chemical records in addition to the initial matching chemical record (the “primary” record). These additional records appear if they contain the chemical name or search term. Click any of these non-primary chemicals on the **Search Results** screen to display the sections of the record best matching your query term(s) (**Best Sections**), those where the chemical search term(s) appears with greatest frequency. The term(s) searched appear(s) in red.

Additional Resources

For further information, we recommend these additional resources:

- ▶ [CCRIS Fact Sheet:](http://www.nlm.nih.gov/pubs/factsheets/ccrisfs.html)
www.nlm.nih.gov/pubs/factsheets/ccrisfs.html



CCRIS Search Exercises

Search Example: Locate the record for *ethanol* and review the carcinogenicity studies.

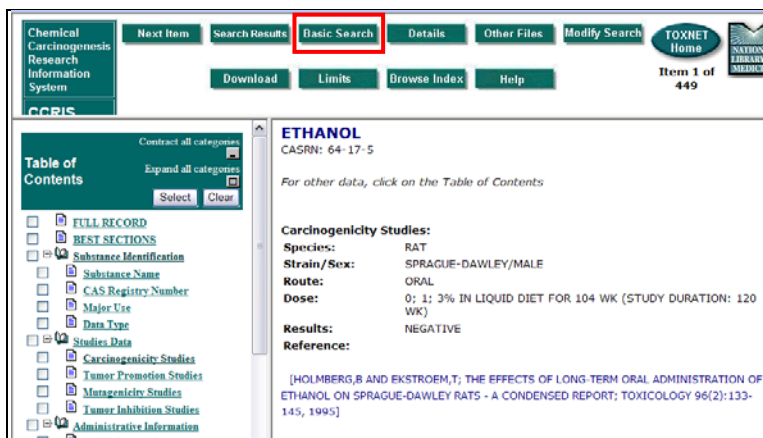
Suggested Solution:

- ▶ Go to toxnet.nlm.nih.gov
- ▶ Click **CCRIS** in the **Select Database** column
- ▶ Type **ethanol** in the search box
- ▶ Click the **Search** button

- ▶ Click **ETHANOL**

- ▶ Click Carcinogenicity Studies under **Studies Data** in the **Table of Contents**

- Review the information retrieved in the right frame
- Click the **Basic Search** button at the top of the page to prepare for the next search



Exercise 1: Does the record for *chromium* contain any positive mutagenicity studies?

Suggested Solution:

- | | |
|--------|---|
| Type | chromium in the search box |
| Click | the Search button |
| Click | CHROMIUM COMPOUNDS |
| Click | <u>Mutagenicity Studies</u> under <u>Studies Data</u> in the Table of Contents |
| Review | the information in the right frame |
| Click | the Basic Search button at the top of the page to prepare for the next search |

Exercise 2: Locate the record for *asbestos* and view the other files available.

Suggested Solution:

- | | |
|--------|--|
| Type | asbestos in the search box |
| Click | the Search button |
| Click | ASBESTOS |
| Click | the Other Files button at the top of the page |
| Review | other database sources |
| Close | the pop-up window |
| Click | the Basic Search button at the top of the page to prepare for the next search |

Exercise 3: How many substances are identified in CCRIS as positive for brain cancer?

Suggested Solution:

- | | |
|--------|---|
| Type | positive brain cancer in the search box |
| Click | the Search button |
| Click | chemical record(s) of your choice |
| Review | the information in the right frame |
| Click | the TOXNET Home button at the top right of the page to prepare for a new session |

GENE-TOX

GENE-TOX is a toxicology data file of the National Library of Medicine's Toxicology Data Network (TOXNET®). It is created by the U.S. Environmental Protection Agency and contains genetic toxicology (mutagenicity) test data, resulting from expert peer review of the open scientific literature, on over 3,000 chemicals. The GENE-TOX program was established to select assay systems for evaluation, review data in the scientific literature, and recommend proper testing protocols and evaluation procedures for these systems.

toxnet.nlm.nih.gov

Searching GENE-TOX

Search GENE-TOX by chemical or other name, chemical name fragment, Chemical Abstracts Service (CAS) Registry Number, and/or subject terms. By default, the system adds synonyms and CAS numbers to chemical searches.

Use truncation (*), Boolean operators (AND, OR, NOT), nested parentheses, limits, and index browsing to refine your search results.

Click the **Limits** button on the home page to search:

- ▶ Exact words, singular & plural forms, or word variants
- ▶ Records with the phrase, all words, or any words
- ▶ In specific fields or categories of fields—Click the plus sign (+) to the left of a category to show all fields in that category. Use the (-) and (□) buttons above and to the right of the list of categories to contract or expand all categories.

With the **Browse the Index** feature, the system returns a list of index terms related to the search term entered and the number of records containing that term. Select one or more index terms and click the **Select** button for the search results. Scan the index above or below the original display by clicking the **Up** or **Down** button.

Browse GENETOX

benzene

(e.g. micronucleus positive styrene, calcium chloride, 139-06-0)

Search
Clear
Help

☒ All Words
☐ CAS Registry Number
☐ Chemical Name

Return to Basic Search

GENETOX Browse Results

benzene

Search
Clear
Return to Basic Search

☒ All Words
 ☐ CAS Registry Number
 ☐ Chemical Name

Check one or more text words. Then click on SELECT.

Start of Text Word Browse: **benzene**

Up
Down
Select

Check to Select	Number of Records	Index Term
<input type="checkbox"/>	352	benzene
<input type="checkbox"/>	3	benzeneacetic
<input type="checkbox"/>	1	benzenediamine
<input type="checkbox"/>	1	benzeneethanamine
<input type="checkbox"/>	6	benzenemethanamine

GENE-TOX Search Results

Your initial retrieval is displayed as a list of substance names in blue and their CAS Registry Numbers. Substances are listed in relevancy ranked order. Relevancy ranking is based on the number of individual search terms occurring in a document, the number of times each search term occurs in a document, the rarity of the search terms within the database, and the nearness of search terms to each other. Records containing combinations of search terms tend to be ranked higher than records with isolated occurrences of search terms.

The **Record** screen is organized into three sections:

1. Navigation buttons at the top of the screen allow you to link to **Other Files** (NLM databases), **Modify Search**, **Download**, return to the **Basic Search** screen, and more.
2. A **Table of Contents** in the left frame allows you to choose categories and fields for display.
3. Chemical Data is shown in the right frame.

When searching for a chemical, your retrieval may include other chemical records in addition to the initial matching chemical record (the “primary” record). These additional records appear if they contain the chemical name or search term. Click any of these non-primary chemicals on the **Search Results** screen to display the sections of the record best matching your query term(s) (**Best Sections**), those where the chemical search term(s) appear(s) with greatest frequency.

Search term(s) appear(s) in red:

The screenshot displays the GENE-TOX Search Results interface. At the top, a search bar contains the term 'benzene'. Below the search bar, a table lists search results. The first result is 'BENZENE' (CASRN: 71-43-2). The second result, 'RESERPINE' (CASRN: 50-55-5), is highlighted with a red circle. The third result is 'NALAMID' (CASRN: 61-12-7). To the right of the search results, a detailed view of the 'RESERPINE' record is shown. This view includes a 'Table of Contents' on the left and a 'Best Sections' section on the right. In the 'Best Sections' section, the 'Chemical Classification Category' is listed as 'Benzene', which is also circled in red. The interface includes various navigation buttons such as 'Save Checked Items', 'Sort', 'Details', 'History', 'Download', 'Modify Search', 'Basic Search', 'Browse Index', 'Help', and 'TOXNET Home'.

Additional Resources

For further information, we recommend these additional resources:

- [GENE-TOX Fact Sheet:](http://www.nlm.nih.gov/pubs/factsheets/genetxfs.html)
www.nlm.nih.gov/pubs/factsheets/genetxfs.html



GENE-TOX Search Exercises

Search Example: Using the CAS registry number 100-42-5, locate the full record for this chemical.

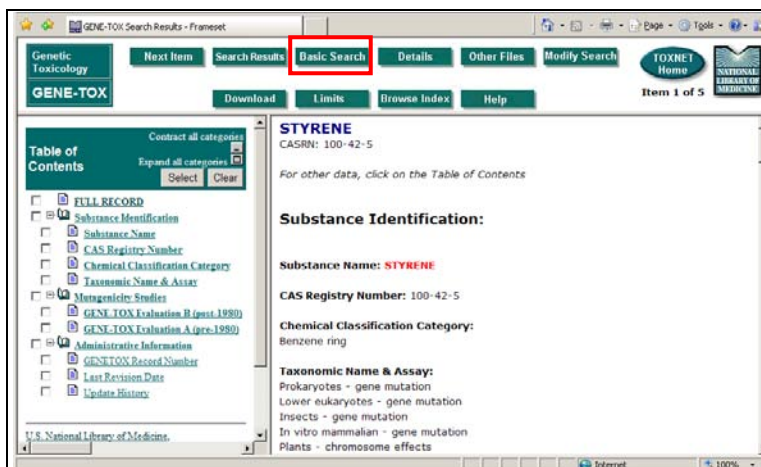
Suggested Solution:

- ▶ Go to toxnet.nlm.nih.gov
- ▶ Click **GENETOX** in the **Select Database** column
- ▶ Type **100-42-5** in the search box
- ▶ Click the **Search** button

- ▶ Click **STYRENE**

- ▶ Click **FULL RECORD** under the **Table of Contents**

- Review the information in the right frame
- Click the **Basic Search** button at the top of the page to prepare for the next search



Exercise 1: Are there any mutagenicity study panel reports for *xylene*?

Suggested Solution:

- | | |
|--------|---|
| Type | xylene in the search box |
| Click | the Search button |
| Click | XYLENE |
| Click | <u>Mutagenicity Studies</u> in the Table of Contents |
| Review | the information in the right frame |
| Click | the link for the Panel Report of your choice to view the abstract |
| Review | the abstract in TOXLINE |
| Click | the browser's Back button to return to the GENE-TOX results page |
| Click | the Basic Search button at the top right of the page to prepare for the next session |

Exercise 2: Has *cyclophosphamide* been studied for effects on human male fertility and sterility?

Suggested Solution:

- | | |
|--------|--|
| Type | cyclophosphamide human male fertility in the search box |
| Click | the Search button |
| Click | CYCLOPHOSPHAMIDE |
| Review | the Best Sections information in the right frame |
| Click | the TOXNET Home button at the top right of the page to prepare for the next session |

ITER

ITER (International Toxicity Estimates for Risk) is a toxicology data file on the National Library of Medicine's (NLM) Toxicology Data Network (TOXNET®) and contains data in support of human health risk assessments. Compiled by Toxicology Excellence for Risk Assessment, ITER is a small database with data on over 600 chemical records. It is structured to provide a comparison of international risk assessment information in a side-by-side format and explains differences in risk values derived by different organizations.

The screenshot shows the TOXNET Toxicology Data Network homepage. At the top, there's a header with the NLM logo and navigation links like 'TOXNET PDA Access', 'SIS Home', 'About Us', 'Site Map & Search', and 'Contact Us'. Below this, a banner reads 'International Toxicity Estimates for Risk (ITER) - Risk information for over 600 chemicals from authoritative groups worldwide.' The main content area is divided into three columns. The left column, 'Select Database', lists various databases including ChemIDplus, HSDB, TOXLINE, CCRIS, DART, GENETOX, IRIS, **ITER** (highlighted), LactMed, Multi-Database, TRI, Haz-Map, Household Products, TOXMAP, and TOXNET Home. The middle column, 'Search ITER', features a search input field with an example '(e.g. vinyl chloride, liver cancer risk, 78-00-2)', buttons for 'Search', 'Clear', and 'Help', a checkbox for 'For chemicals, add synonyms and CAS numbers to search:' (set to 'Yes'), and buttons for 'Limits' and 'Browse the Index'. The right column contains links to 'Env. Health & Toxicology', a 'Portal to environmental health and toxicology resources' with a 'VISIT SITE' button, and a 'Support Pages' section listing links like 'ITER Glossary', 'What's New', 'Risk Methods', 'Help', 'Fact Sheet', 'Sample Record', and 'TOXNET FAQ'.

toxnet.nlm.nih.gov

ITER provides both risk data and cancer classifications. Information is derived from:

- ▶ Agency for Toxic Substances & Disease Registry (ATSDR)
- ▶ Health Canada
- ▶ U.S. Environmental Protection Agency (EPA)
- ▶ International Agency for Research on Cancer (IARC)
- ▶ NSF International (National Sanitation Foundation)
- ▶ National Institute of Public Health & the Environment (RIVM), The Netherlands

Searching ITER

Search ITER by chemical or other name, chemical name fragment, Chemical Abstracts Service (CAS) Registry Number, and/or subject terms. By default, the system adds synonyms and CAS numbers to chemical searches.

Use truncation (*), Boolean operators (AND, OR, NOT), nested parentheses, limits, and index browsing to refine your search results.

contain the chemical name or search term. Click any of these non-primary chemicals on the **Search Results** screen to display the sections of the record best matching your query terms (**Best Sections**), those where the chemical search term(s) appear(s) with greatest frequency. Search term(s) appear(s) in red.

Additional Resources

For further information, we recommend these additional resources:

- ▶ ITER Fact Sheet:
www.nlm.nih.gov/pubs/factsheets/toxnetfs.html



ITER Search Exercises

Search Example: Locate noncancer oral risk data for the chemical *beryllium*.

Suggested Solution:

- ▶ Go to toxnet.nlm.nih.gov
- ▶ Click **ITER** in the **Select Database** column
- ▶ Type **beryllium** in the search box
- ▶ Click the **Search** button

United States National Library of Medicine
TOXNET
Toxicology Data Network

TOXNET PDA Access | SIS Home | About Us | Site Map & Search | Contact Us

Env. Health & Toxicology | TOXNET | ITER

International Toxicity Estimates for Risk (ITER) - Risk information for over 600 chemicals from authoritative groups worldwide.

Select Database

- ChemIDplus
- HSDB
- TOXLINE
- CCRIS
- DART
- GENETOX
- IRIS
- ITER**
- LactMed
- Multi-Database
- TRI
- MapMan

Search ITER

beryllium
(e.g. vinyl chloride, liver cancer risk, 78-00-2)

Search Clear Help

For chemicals, add synonyms and CAS numbers to search:
☒ Yes ☐ No

Limits Browse the Index

Env. Health & Toxicology

Portal to environmental health and toxicology resources
VISIT SITE

Support Pages

- ITER Glossary
- What's New
- Risk Methods
- More About ITER
- Risk Assessment Links
- Help
- Fact Sheet

- ▶ Click **BERYLLIUM AND COMPOUNDS**

TOXNET
Toxicology Data Network

SIS Home | About Us | Site Map & Search | Contact Us

Env. Health & Toxicology | TOXNET | ITER

ITER Search Results

beryllium Search Clear Limits

For chemicals, add synonyms and CAS numbers to search: ☒ Yes ☐ No

Items 1 through 2 of 2
Substance Names are sorted in [relevance-ranked](#) order.

Select Record Substance Name

The following is the primary record for the chemical. All of the query terms were found.

1 ☒ **BERYLLIUM AND COMPOUNDS**
Synonym: beryllium
7440-41-7

The following record contains one or more of the requested chemical name(s) and all of the query terms anywhere in the record.

2 ☐ CADMIUM, INORGANIC

- ▶ Click **Noncancer Oral Risk Values Table** under **Data-Noncancer Oral** in the **Table of Contents**

International Toxicity Estimates for Risk
ITER

Next Item Search Results Basic Search Details Other Files Modify Search

Download Limits Browse Index Help

TOXNET Home
Item 1 of 2

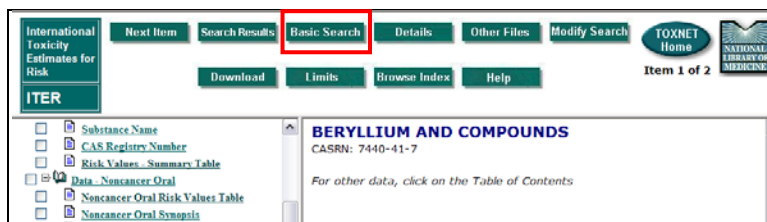
BERYLLIUM AND COMPOUNDS
CASRN: 7440-41-7

For other data, click on the Table of Contents

Noncancer Oral Risk Values Table:
ITER Noncancer Oral Risk Table for: **BERYLLIUM AND COMPOUNDS**

Risk Value Parameter\ Organization	ATSDR ¹	Health Canada ²	IARC ³	IPRV ⁴	ITER PR ⁵	NSF Intj ⁶	RIVM ⁷	U.S. EPA ⁸
Risk Value Name	chronic MRL	--	--	--	--	--	--	RfD
Risk Value*	2E-3	--	--	--	--	--	--	2E-3
Year	2002	--	--	--	--	--	--	1998
Basis (Experimental)*	BMDL10 0.56	--	--	--	--	--	--	BMD10
Basis (Adjusted)*	NA	--	--	--	--	--	--	NA

- Review the information in the right frame
- Click the **Basic Search** button at the top of the page to prepare for the next search.



Exercise 1: Locate the record for *sulfur dioxide*. Do ATSDR and IARC have any risk data for oral cancer?

Suggested Solution:

- | | |
|--------|--|
| Type | sulfur dioxide in the search box |
| Click | the Search button |
| Click | SULFUR DIOXIDE |
| Click | <u>Data-Cancer Oral</u> in the Table of Contents |
| Review | the Data-Cancer Oral table in the right frame |
| Click | the Basic Search button at the top right of the page to prepare for the next search |

Exercise 2: How do the Dutch RIVM, Health Canada, and ATSDR compare in their evaluation of carcinogenicity data for *ethylene glycol*?

Suggested Solution:

- | | |
|--------|--|
| Type | ethylene glycol in the search box |
| Click | the Search button |
| Click | ETHYLENE GLYCOL |
| Click | <u>Data – Cancer Inhalation</u> in the Table of Contents to the left |
| Review | the Cancer Inhalation Table in the right frame |
| Scroll | down to review Cancer Inhalation Synopsis |
| Click | the Basic Search button at the top of the page to prepare for the next search |

TRI and TOXMAP



Toxics Release Inventory

The Toxics Release Inventory (TRI) is a publicly available resource of the U.S. Environmental Protection Agency containing detailed information on approximately 650 chemicals and chemical categories, which over 23,000 U.S. industrial and federal facilities manage through disposal or other releases, recycling, energy recovery, or treatment. This inventory was established under the Emergency Planning and Community Right to Know Act of 1986 (EPCRA) and was expanded by the Pollution Prevention Act of 1990. TRI's data, beginning with the 1987 reporting year, cover air, water, land, and underground injection releases as well as transfers to waste sites.

TOXNET
Toxicology Data Network

United States National Library of Medicine

TOXNET PDA Access | SIS Home | About Us | Site Map & Search | Contact Us

Env. Health & Toxicology | TOXNET | TRI

Toxics Release Inventory (TRI) - Annual environmental releases of over 600 toxic chemicals by U.S. facilities. About the Environmental Protection Agency (EPA) Toxics Release Inventory (TRI) Program.

Select Database

- ChemIDplus
- HSDB
- TOXLINE
- CCRIS
- DART
- GENETOX
- IRIS
- ITER
- LactMed
- Multi-Database
- TRI**
- Haz-Map
- Household Products
- TOXMAP
- TOXNET Home

Additional Resource

- CPDB

Search TRI

Chemical Name or CAS Registry Number

Search Clear Help

Add synonyms and CAS numbers to search:
☒ Yes ☐ No

TRI Files:

<input checked="" type="checkbox"/> TRI2008	<input type="checkbox"/> TRI2007	<input type="checkbox"/> TRI2006
<input type="checkbox"/> TRI2005	<input type="checkbox"/> TRI2004	<input type="checkbox"/> TRI2003
<input type="checkbox"/> TRI2002	<input type="checkbox"/> TRI2001	<input type="checkbox"/> TRI2000
<input type="checkbox"/> TRI1999	<input type="checkbox"/> TRI1998	<input type="checkbox"/> TRI1997
<input type="checkbox"/> TRI1996	<input type="checkbox"/> TRI1995	<input type="checkbox"/> TRI1994
<input type="checkbox"/> TRI1993	<input type="checkbox"/> TRI1992	<input type="checkbox"/> TRI1991
<input type="checkbox"/> TRI1990	<input type="checkbox"/> TRI1989	<input type="checkbox"/> TRI1988
<input type="checkbox"/> TRI1987		

Env. Health & Toxicology

Portal to environmental health and toxicology resources

Support Pages

- Help
- Fact Sheet
- Sample Record
- TOXNET FAQ

Select File Year(s)

toxnet.nlm.nih.gov

Searching TRI

Search TRI by chemical or other name, chemical name fragment, Chemical Abstracts Service (CAS) Registry Number, and/or subject terms. By default, the system adds synonyms and CAS numbers to chemical searches. Use truncation (*), Boolean operators (AND, OR, NOT), nested parentheses, and limits to refine your search results.

TRI currently contains data from 1987 through 2008. By default the system will search the most current year. You can also limit your search with the following criteria:

- Facility Name
- Facility Location
 - Select State, City/State, County/State, or Zip

Facility Names
(Separate multiple entries with commas)

Facility Location
(Separate multiple entries for state, city/state, or zip with commas. For example: NJ, DE, or Trenton/NJ, Houston/TX, or 21113, 21224.)

☒ State ☐ City/State
☐ County/State ☐ Zip

TRI Reporting Form Type

☒ Both Form R and Form A
☐ Form R (long form) only
☐ Form A (short form) only

Standard Industrial Classification Code, North American Industry Classification System Code
(Separate multiple entries with commas)

Greater Than for

- ▶ Standard Industrial Classification Code or North American Industry Classification System Code
- ▶ Separate multiple entries with commas
- ▶ Weight in pounds (Great Than)
- ▶ Type of release (air, water, land, underground injection, or total environmental release)

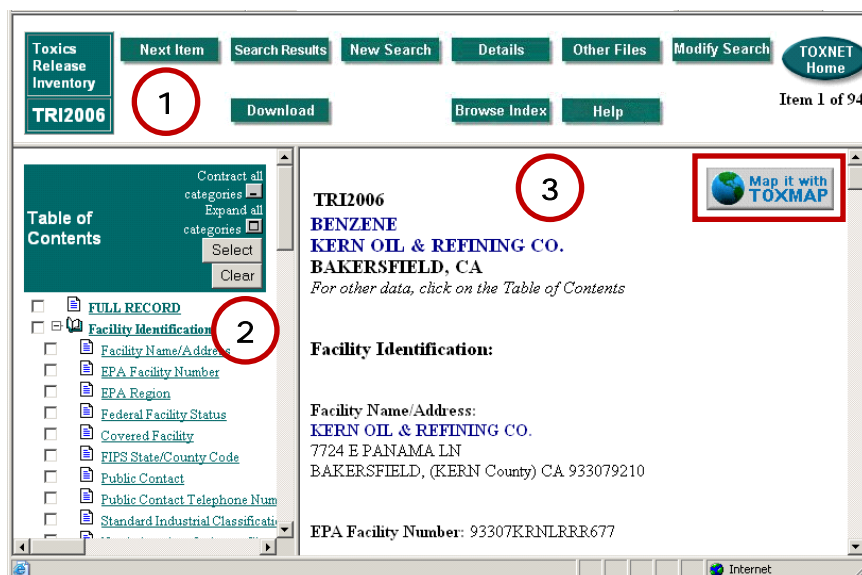
With the Browse the Index feature, the system returns a list of index terms related to the search term entered and the number of records containing that term. Select one or more index terms and click the Select button for the search results. Scan the index above or below the original display by clicking the Up or Down button.

Search Results

Your initial retrieval is displayed in relevancy ranked order as a list of abbreviated records with facility name in blue and hot-linked, chemical name, and city and state where the facility is located. Relevancy ranking is based on the number of individual search terms occurring in a document, the number of times each search term occurs in a document, the rarity of the search terms within the database, and the nearness of search terms to each other. Records containing combinations of search terms tend to be ranked higher than records with isolated occurrences of search terms.

The Record screen is organized into three sections:

1. Navigation buttons at the top of the screen allow you to link to Other Files (NLM databases), Modify Search, Download, return to the Basic Search screen, and more.
2. A Table of Contents in the left frame allows you to choose categories and fields for display.
3. Data is shown in the right frame—Click the Map it with TOXMAP button on the right to visually explore on-site releases in TOXMAP



Additional Resources

For further information, we recommend these additional resource:

- ▶ TRI Fact Sheet
www.nlm.nih.gov/pubs/factsheets/trifs.html

TOXMAP

TOXMAP is a Geographic Information System (GIS) that uses maps of the United States to help users visually explore data from the Environmental Protection Agency's Toxics Release Inventory (TRI) and Superfund programs. TOXMAP helps users create nationwide, regional, or local area maps showing where TRI chemicals are released on-site into the air, water, and ground. Maps can also show locations of Superfund sites on the National Priorities List (NPL). The NPL is the list of national priorities among the known releases or threatened releases of hazardous substances, pollutants, or contaminants throughout the United States and its territories. The NPL is intended primarily to guide the EPA in determining which sites warrant further investigation.

United States National Library of Medicine

TOXMAP®
Environmental Health e-Maps

Home TRI Facilities TRI Releases TRI Trends Superfund Combo Search Help Contact Us

Welcome News Accessibility Fact Sheet For Teachers Tour About Site Map

Quick Search

Select Dataset(s):
☒ TRI ☒ Superfund NPL

Chemical Name

City

State ZIP (Lookup)

Search Clear

Choose a region...
[More search options...](#)

Search TOXNET® TRI

Use Quick Search or click on a map to explore on-site toxic releases and hazardous waste sites from the EPA's [Toxics Release Inventory \(TRI\)](#) and the [Superfund National Priorities List \(NPL\)](#).

Find Toxic Releases & Hazardous Waste Sites
 Enter your ZIP:

[More info](#)

[Try the TOXMAP Widget](#)

- [Updated Superfund, NCI Mortality data](#)
- [Try the TOXMAP Toolbar](#)

[Subscribe to TOXMAP news feed](#)

Environmental News from EPA:

- [EPA Removes Morris County Site From Superfund National Priorities: Cleanup Work Complete](#)
- [EPA to remove hazardous wastes at Elizabeth Mining and Development property in Montrose County \(Colo.\)](#)
- [EPA Reaches Major Milestone at Welsbach Superfund Site](#)

TRI facilities (blue) and Superfund NPL sites (red).

[What is TOXMAP?](#)
[What is the Toxics Release Inventory \(TRI\)?](#)
[What is the "Superfund" Program?](#)
[more...](#)

Map Features

TOXMAP offers several ways to create maps using the tabs and buttons along the top of the page, the **Quick Search** box on the home page, and the map controls below the map.

TOXMAP can create several types of maps:

- ▶ TRI Facilities
- ▶ TRI Chemical Releases
- ▶ TRI Chemical Trends
- ▶ Superfund Maps
- ▶ Combination (Combo) Maps

MAP CONTROLS

TRI

☐ None
☐ Facilities
☐ Releases : 2006
☐ Trends

Superfund

☐ None
☐ All NPL
☐ NPL Final
☐ NPL Deleted
☐ NPL Proposed

Demographic

☐ None
☐ Population Density - 2000

[Apply other demographics](#)

[Search chemical](#) | [Define a combo map](#) | [Start over](#)

TOXMAP also overlays map data such as:

- ▶ U.S. Census Data—1990 and 2000 demographics (population, ethnicity, age, gender ratio)
- ▶ Income Data—per capita personal income
- ▶ Health Data—mortality data for cancer and various causes
- ▶ Reference Data—cities, roads, federal land, and urban areas

Searching and Creating Maps in TOXMAP

TOXMAP's **Quick Search** feature on the home page allows you to search TRI and Superfund data by chemical and to zoom the resulting map to a specific city, state, or zip code. More advanced search options are available by clicking the [More search options...](#) link or by selecting the **Search** tab at the top of the page.

The **Search** tab page allows users to search a chemical CAS/RN, TRI facility name/ID, release year ranges, release amount, Superfund NPL site name/ID, and Hazard Ranking System (HRS) score.

Quick Search

Select Dataset(s):
☒ TRI ☒ Superfund NPL

Chemical Name

City

State ZIP [\[Lookup\]](#)

[Choose a region...](#)
[More search options...](#)

Home TRI Facilities TRI Releases TRI Trends **Superfund** Combo Search Help Contact Us

Search

Click the "Set Region" tab to show results only in a specified geographic region.

CHOOSE A CHEMICAL

Chemical: CAS RN:

TRI or Superfund Chemical

CHOOSE A DATASET

Toxics Release Inventory (TRI)

☐ Search all TRI facilities
☐ Search only facilities with the selected chemical
☒ Do not search TRI facilities

Superfund National Priorities List (NPL)

☐ Search all Superfund sites
☐ Search only NPL sites with the selected chemical
☒ Do not search Superfund sites

TRI Facility Name
 TRI Facility ID

Release Medium Any Medium
☐ Water
☐ Air
☐ Land
☐ Underground Injection

Release Years 2006 to 2006

Release Exceeds lbs.

NPL Site Name
 EPA ID

NPL Status All
☐ Final
☐ Proposed
☐ Deleted

Hazard Ranking System Score 0 to 100

Additional Resources

For further information, we recommend these additional resources:

- ▶ [Online Tutorial: TOXMAP Basics](#)
toxmap.nlm.nih.gov/toxmap/tour/misc/ToxmapBasics.html
- ▶ [TOXMAP Tour](#)
toxmap.nlm.nih.gov/toxmap/tour/index.html
- ▶ [TOXMAP Fact Sheet](#)
www.nlm.nih.gov/pubs/factsheets/toxmap.html

TRI/TOXMAP Decision Tree

TRI (Toxics Release Inventory) is the Environmental Protection Agency's (EPA) publicly available database that contains information on toxic chemical releases and waste management activities, and more recently, source reduction and recycling information, reported annually by U.S. industrial and federal facilities beginning with the 1987 reporting year. TRI is accessible via the National Library of Medicine's (NLM) **TOXNET®** (TOXicology Data NETwork) databases, which cover toxicology, hazardous chemicals, environmental health and related areas.

TOXMAP is a geographic information system from the NLM's Division of Specialized Information Services that uses maps of the United States to help users visually explore data from the EPA's TRI and Superfund Program. With TOXMAP, users can create nationwide, regional, or local area maps showing where TRI chemicals are released on-site into the air, water, and ground. Information on the releasing facilities is provided. Maps can also show locations of Superfund sites, with listings of all chemical contaminants present at these sites.

Use this Decision Tree to choose the correct database:


TOXNET / TRI	TOXMAP
You want full-reference, book-style information on TRI facilities or releases	You are interested in a health-related presentation of TRI data
You are using other TOXNET resources	You want to see TRI locations on a map
You want to benefit from chemical synonyms	You are interested only in on-site chemical releases
You would like to use a browse interface	You want to search by combinations of states and/or counties
You want to calculate the total release of chemicals	You are also interested in Superfund sites and/or demographic data
You want the release mediums for air, water, underground injection, and land	You want location data from the Federal Registry System (not self-reported locations)




TRI/TOXMAP Exercises

Search Example: How many pounds of *ethylbenzene* were released to the environment in Jackson Mississippi between 2007-2008? Map the releases in TOXMAP and view the environmental release information for the first facility.

Suggested Solution:

- ▶ Go to toxnet.nlm.nih.gov
 - ▶ Select TRI from the column of databases
 - ▶ Type **ethylbenzene** in the Chemical Name or CAS Registry Number search box
 - ▶ Select the TRI years of 2007 and 2008
-  TRI2008 is selected by default

- ▶ Type **jackson/ms** in the Facility Location search box
 - ▶ Select City/State under Facility Location search box
-  State is selected by default
- ▶ Click the **Search** button

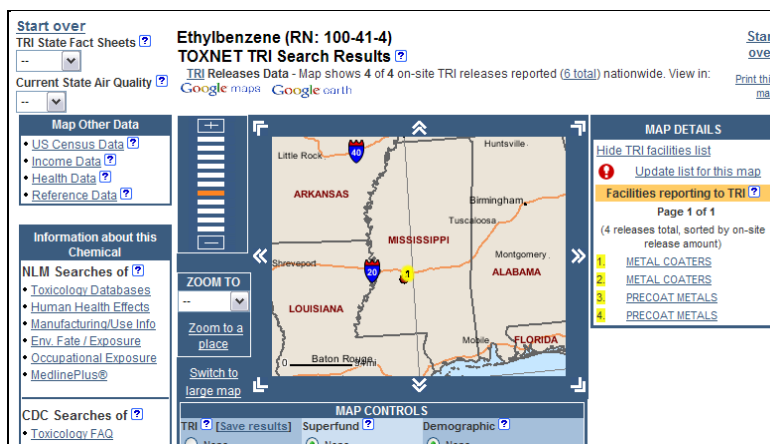
- ▶ Click the **Calculate Totals** button at the left of page
- ▶ Review the Environmental Release information for ethylbenzene
- ▶ Backspace to return to search results page

TRI Calculation Results

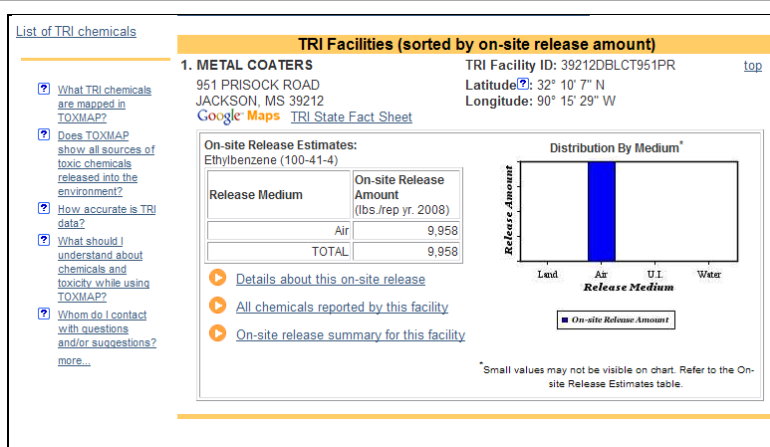
On Site Environmental Release (Form R)		Pounds
Total Air Release		22,974
Total Water Release		0
Total Underground Injection Release		0
Total Land Release		0
Total Disposal (Environmental Release)		22,974
Off-Site Waste Transfer (Form R)		Pounds
Total Publicly Owned Treatment Works Transfer		0
Total Other Off-Site Locations Transfer		180,621
Total Off Site Waste Transfer		180,621
Total Environmental Release and Off-Site Waste Transfer		203,595

There were also 2 [Form A](#) submissions that accounted for up to 5,500 pounds of production-related waste. (Includes all on- and off-site releases, recycling, energy recovery, treatment for destruction, etc.)

- ▶ Click the **Map it with TOXMAP** button
- ▶ Click MS from the **ZOOM TO** pull-down menu at the left of the map
- ▶ Click TRI on-site releases details at the right of the map below **MAP DETAILS**



- ▶ Click a facility name link under **Facilities reporting to TRI**
- ▶ Review the **Emissions Estimates** and All chemicals reported by this facility



Exercise 2: Link to NLM's HSDB to explore the human health effects of *ethylbenzene*.

Suggested Solution (continued from demonstration exercise)

- | | |
|--------|--|
| Scroll | to the top of the page and find Chemical Information section to the top left of the map |
| Click | <u>Human Health Effects</u> under Information about this Chemical |
| Review | the information in the HSDB Search Results window |
| Close | the HSDB window and return to the TOXMAP results page |
| Click | the Home tab |
| Click | the link to the Environmental Health and Toxicology Portal at the bottom of the page to prepare for the next session |

MEDLINE/PubMed, TOXLINE, and DART



MEDLINE/PubMed

PubMed is a database developed by the National Center for Biotechnology Information (NCBI) at the National Library of Medicine and is available free on the Web. PubMed provides access to **MEDLINE**, NLMs premier bibliographic database containing citations and author abstracts from approximately 5,400 biomedical journals published in the United States and worldwide. PubMed also provides access to citations for selected articles in life science journals not included in **MEDLINE** and additional relevant Web sites and links to molecular biology resources. The scope of PubMed includes such diverse topics as microbiology, delivery of health care, nutrition, pharmacology, and environmental health.

The screenshot shows the PubMed homepage with the following sections and annotations:

- Search Bar:** Located at the top, containing a search input field with "PubMed" entered, a "Search" button, and a "Clear" button. It is highlighted with a red box and a red dot.
- NCBI Header:** Located at the top right, containing links for "My NCBI" and "Sign In". It is highlighted with a red box and a red dot.
- Tools & Resources:** A section containing three columns of links:
 - Using PubMed:** PubMed Quick Start Guide, Full Text Articles, PubMed FAQs, PubMed Tutorials, New and Noteworthy.
 - PubMed Tools:** Single Citation Matcher, Batch Citation Matcher, Clinical Queries, Topic-Specific Queries.
 - More Resources:** MeSH Database, Journals Database, Clinical Trials, E-Utilities, LinkOut.
 This section is highlighted with a red bracket.
- Links to NCBI Resources:** A section at the bottom containing five columns of links:
 - GETTING STARTED:** NCBI Help Manual, NCBI Handbook, Training & Tutorials.
 - RESOURCES:** Literature, DNA & RNA, Proteins, Sequence Analysis, Genes & Expression, Genomes & Maps, Domains & Structures, Genetics & Medicine, Taxonomy, Data & Software, Training & Tutorials, Homology.
 - POPULAR:** PubMed, Nucleotide, BLAST, PubMed Central, Gene, Bookshelf, Protein, OMM, Genome, SNP, Structure.
 - FEATURED:** GenBank, Reference Sequences, Map Viewer, Genome Projects, Human Genome, Mouse Genome, Influenza Virus, Primer-BLAST, Sequence Read Archive.
 - NCBI INFORMATION:** About NCBI, Research at NCBI, NCBI Newsletter, NCBI FTP Site.
 This section is highlighted with a red bracket.

pubmed.gov

PubMed Home Page

The PubMed homepage includes a NCBI Header, Search Bar, and Footer that are common to all PubMed pages. The **NCBI Header** includes a NCBI Resources pull-down menu categorized by topic, a How To menu, and the Sign In for My NCBI. The **Search Bar** has the database selection menu, and includes a link to **Advanced search** and **Help**. Additional Search bar selections, RSS, and Save search, display after running a PubMed search. Popular tools and resources are under **PubMed Tools** (e.g., the Single Citation Matcher, Clinical Queries, and Topic-Specific Queries) and

More Resources (e.g., MeSH Database, Journals Database, and Clinical Trials). The **Footer** includes links to many NCBI resources.

Searching PubMed

Enter your search term(s) into the search box and click the Search button for basic searching. To find an author, enter the author's last name, then first and second initials (e.g., smith ja). Other search options include the following:

- To search for a journal, use the Journals Database—allows searching by topic, journal title/abbreviation, ISSN, or browsing by subject terms.
- To build a search strategy with MeSH terms, use the MeSH Database—NLM's controlled Medical Subject Heading (MeSH) vocabulary provides a consistent way to retrieve information that may use different terminology for the same concepts.
- To search for specific types of references, use either Clinical Queries or Topic-Specific Queries.

Limits

Refine and focus your search with the **Limits** option located above the search box. Checkboxes may be selected for Type of Article, Language, Subsets of journals or topics, Ages, Humans or Animals, Gender, and Dates. Restrict a search to items with links to full text, and make multiple choices within categories. A "Limits Activated" message will appear above the search results list. Limits remain in effect until removed.

The screenshot displays the PubMed 'Limits' section. At the top, there is a search bar with 'PubMed' entered and buttons for 'Advanced search' and 'Help'. Below the search bar, the 'Limits' section is organized into several categories:

- Dates:** A dropdown menu for 'Published in the Last' set to 'Any date'.
- Type of Article:** Checkboxes for Clinical Trial, Editorial, Letter, Meta-Analysis, and Practice Guideline.
- Languages:** Checkboxes for English, French, German, Italian, and Japanese.
- Species:** Checkboxes for Humans and Animals.
- Gender:** Checkboxes for Male and Female.
- Subsets:** A section for 'Journal Groups' with checkboxes for Core clinical journals, Dental journals, and Nursing journals.
- Ages:** Checkboxes for All Infant: birth-23 months, All Child: 0-18 years, All Adult: 19+ years, Newborn: birth-1 month, and Infant: 1-23 months.
- Text Options:** Checkboxes for Links to full text, Links to free full text, and Abstracts.
- Search Field Tags:** A dropdown menu for 'Field' set to 'All Fields'.

At the bottom of the Limits section are 'Reset' and 'Search' buttons.

Advanced Search

The Advanced Search link provides three options to refine and focus a search: **Search Builder**, **Search History**, and **More Resources**. Search Builder allows creation of a search using Boolean operators. Using the All Fields selection will run search terms through the Automatic Term Mapping process, or a specific field may be selected to apply to the term. Search History tracks search statements and numbers them as links. Clicking on the numbered link provides a menu allowing search statements to be combined into a new search with the AND, OR or NOT boolean operators, or to be run, deleted, examined in Details, or saved in My NCBI. More Resources provides links to the MeSH and Journals databases, Single citation Matcher, Clinical Queries, and Topic-Specific Queries.

The screenshot displays the 'PubMed Advanced Search' page. At the top, there is a 'Search Box' with a text input field, a 'Limits' link, a 'Details' link, a 'Help' link, and three buttons: 'Search' (blue), 'Preview' (red), and 'Clear' (grey). Below this is the 'Search Builder' section, which includes a dropdown menu set to 'All Fields', a text input field, a dropdown menu set to 'AND', and an 'Add to Search Box' button. A 'Show Index' link is positioned below the input field. The 'Search History' section is empty, with a 'Search History Instructions' link below it. The 'More Resources' section lists several links: 'MeSH Database', 'Journals Database', 'Single Citation Matcher', 'Clinical Queries', and 'Topic-Specific Queries'. Each section has a small upward-pointing arrow icon on its right side. A 'Back to PubMed' link is located in the top right corner.

Search Results

Search results initially display in a summary format in the order they were entered in PubMed as last in, first out. By default, the system displays 20 citations per page. Search results include the following:

- Links to related articles for all citations—click the Related Citations link below the citation
- Links to free full text articles, if available,—click Free article below the citation
- Links to free full text journal articles at Web sites of participating publishers—click Free Full Text under Filter your results

- Links to other NLM resources for additional information—see on the right side of your Search Results page, Titles with your search terms, Free Full-text articles in PubMed Central, Find Related Data and other related information

To display the abstract for a journal article, click the title link. Some citations do not have abstracts and will include the note “No abstract available.”

My NCBI

My NCBI is an easy way to save and update searches on topics of continuing interest. You can choose filters that group your search results. Search updates will automatically be e-mailed to you if selected. To use My NCBI, you must first register and your browser will need to allow pop-ups from the NCBI Web page. Click My NCBI on the right side of the NCBI header.

Ordering Documents

NLM's Loansome Doc is an automated document ordering program that allows PubMed users to order the full text of an article from a participating library. Before an order can be placed, and before a user can register, all Loansome Doc users must first establish an agreement with a library that uses DOCLINE® (NLM's automated interlibrary loan request and referral system). Users who are unsure about which library to contact may obtain assistance from the Regional Medical Library (RML) in their area by calling 1-800-338-7657, Monday-Friday, 8:30 AM - 5:00 PM in all time zones. To register with Loansome Doc go to docline.gov/loansome/login.cfm. During the online registration process, you will create a user account with your name, address, e-mail, and ordering preference.

From PubMed registered Loansome Doc users can access Loansome Doc by performing a search, clicking the check box to the left of the articles they want to order, and selecting **Send to Order** from the pull down menu.

Additional Resources

For further information, we recommend these additional resources:

- [PubMed Help \(an online Help book\)](http://www.ncbi.nlm.nih.gov/books/bv.fcgi?rid=helppubmed.chapter.pubmedhelp)
www.ncbi.nlm.nih.gov/books/bv.fcgi?rid=helppubmed.chapter.pubmedhelp
- [PubMed Quick Tour: Simple Subject Search](http://www.nlm.nih.gov/bsd/viewlet/search/subject/subject.html)
www.nlm.nih.gov/bsd/viewlet/search/subject/subject.html
- [PubMed Quick Tour: Search for an Author](http://www.nlm.nih.gov/bsd/viewlet/search/author/author.html)
www.nlm.nih.gov/bsd/viewlet/search/author/author.html
- [CAM \(Complementary and Alternative Medicine\) on PubMed](http://nnlm.gov/training/consumer/cam/cam-pubmed.pdf)
nnlm.gov/training/consumer/cam/cam-pubmed.pdf
- [Getting Started with LinkOut \(National Network of Libraries of Medicine\)](http://nnlm.gov/training/linkout/)
nnlm.gov/training/linkout/

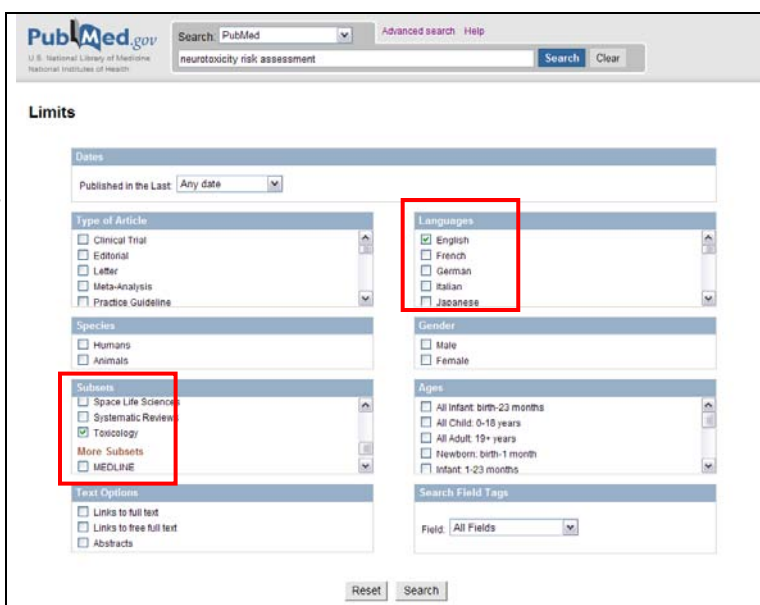
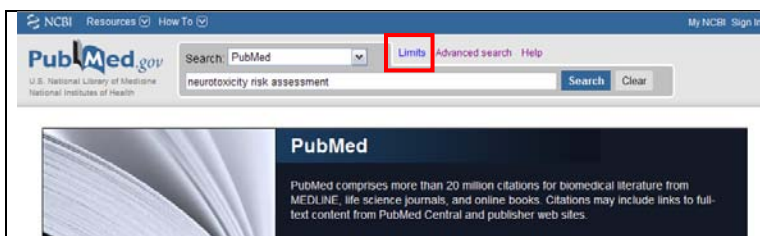


MEDLINE/PUBMED Search Exercises

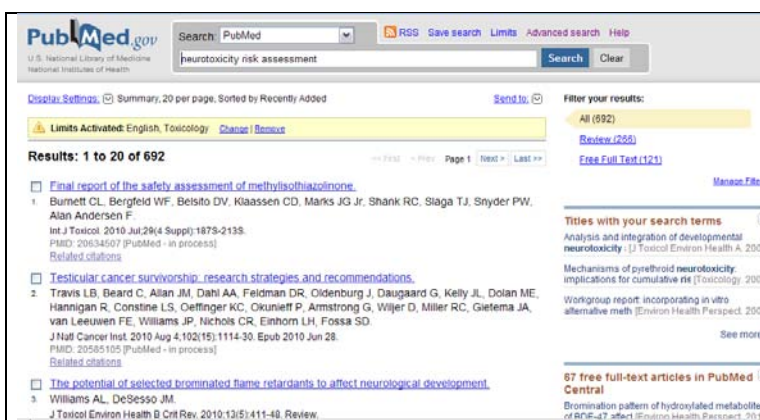
Search Example: Locate toxicological records that reference neurotoxicity risk assessment. Limit your retrieval to toxicology articles written in English.

Suggested Solution:

- ▶ Go to pubmed.gov
- ▶ Type **neurotoxicity risk assessment** in the search box
- ▶ Click **Limits**
- ▶ Click the “English” checkbox under **Languages**
- ▶ Click the “Toxicology” checkbox under **Subsets**
- ▶ Click the **Search** button at the top of the page



- ▶ Click a record link of your choice



- Review the record retrieved
- Deselect the **Limits Activated** by clicking on the **Remove** button



Exercise 1: What research is available for the use of oral rehydration therapy for the treatment of diarrhea associated with cholera?

Suggested Solution:

- | | |
|--------|--|
| Type | oral rehydration therapy diarrhea cholera in the search box |
| Click | the Go button |
| Review | the citation(s) and related articles |
| Click | the Clear button to the right of the search box to prepare for the next search. |

Exercise 2: Locate articles that discuss population studies of colon cancer in Blacks and Whites.

Suggested Solution:

- | | |
|--------|--|
| Type | colon cancer blacks white in the search box |
| Click | the Go button |
| Review | the citation(s) retrieved |
| Click | the Clear button to the right of the search box to prepare for the next search. |

Exercise 3: Recently there has been an increase globally in dengue flu. What research has been published in the *American Journal of Tropical Medicine and Hygiene* within the past year?



Suggested Solution:

- | | |
|--------|--|
| Type | dengue fever in the search box |
| Click | the Limits tab |
| Click | Add Journal to the right of Search by Journal |
| Type | american journal of tropical medicine and hygiene in the Journal Name search box |
| Select | <u>1 year</u> from the Published in the Last pull-down menu |
| Click | the Go button |

- Review the citation(s)
- Click the **Clear** button to the right of the search box to prepare for the next search.

Exercise 4: Dr. Sungano Mharakurwa is a leading authority on the **genetic structure of malaria parasites**. Find an article written by Dr. Mharakurwa titled, “**PCR detection of Plasmodium falciparum in human urine and saliva samples**”.

Suggested Solution:

- Type **PCR detection Plasmodium falciparum urine saliva** in the search box
-  Deselect the one year limit
- Click the **Limits** tab
- Click **Add Author** button to the right of Search by Author
- Type **sungano mharakurwa** in the **Author Name** search box
- Click the **Go** button
- Review the citation
-  You do not need to deselect Limits after an author search.
- Click the **Clear** button to the right of the search box to prepare for the next search.



Exercise 5: Research articles on the subject of health disparities in the United States. Next, e-mail the abstract of the first record to yourself in text format.

Suggested Solution:

- Type **US health disparities** in the search box
- Click the **Go** button
- Click the box to the left of your choice
- Select E-mail from the **Send to** pull-down menu
- Click the **Send to** button
- Select Abstract and Text from the Format pull-down menu and Text from the Format as menu
- Type your e-mail address in the e-mail address box
- Click the **Mail** button
- Review the e-mail confirmation message highlighted in pink above the abstract
- Click the TOXNET link under **Related Resources** in the blue sidebar to prepare for the next session

Exercise 6: Set up a My NCBI user account and conduct and save a search for journal articles on the prevalence of asthma in children.

Suggested Solution:

- Click [My NCBI](#) in the left sidebar under “PubMed Services”
- Click [register for an](#) account under “**Sign into My NCBI**”
 -  Clicking the “Keep me signed in” checkbox will create a permanent cookie so that My NCBI will be indefinitely available on your computer without signing in again.
- Type **asthma prevalence children** in the search box
- Click the **Go** button
- Click **Save Search** at the top of the screen to the right of the search box
- Click the **Save** button
- Complete the Save Search Settings form (optional)
- Click [Save](#)
 -  Your search ([asthma prevalence children](#)) will be listed

Saving and Printing Records in PubMed

The PubMed **Send to Text** function creates a text file of PubMed records, which you can save on your computer. The **Send to** button is available on screens with search results. You can save the entire results of a specific search or selected records. If you don't select specific records before clicking on the **Send to** button, you will create a file on your computer that will contain the entire search results, up to a maximum of 10,000 items.

You can also save records collected from multiple searches by using the **Send to Clipboard** feature. The Clipboard holds a maximum of 500 items. When you save a file, your browser will prompt you to specify where this file should be placed on your computer, and also give you the opportunity to rename the file.

Saving Entire Search Results

- Use the **Display** pull-down menu to select a format.
- Click **Send to File** and your items will be saved in the **Display** format as plain text.



The default for the File feature is to save the entire retrieval—up to 10,000 items—unless you specifically select citations. For example, if you use the Send to File selection on a screen displaying 1-20 items of 2,356, your saved file will contain all 2,356 citations.

Saving Selected Citations from a Single Search

- Use the **Display** pull-down menu to select a format.
- Click in the check boxes next to each citation you want to save. You can move to other pages within the search results to make additional selections.
- Click **Send to File** and your selected items will be saved in the **Display** format as plain text.



Saving a large retrieval may take several minutes. To save citations in html format, use the Save as... function of your browser and change the file extension to html. This will save only the citations displayed on the screen, so you may wish to use the **Show** function and **Send to Text** to adjust your display as needed.

Clipboard

To place an item in the Clipboard, click on the check box to the left of the citation, select **Clipboard** from the **Send to** pull-down menu, and then click the **Send to** button. Once you have added a citation to the Clipboard, the record number color will change to green.



If you select **Clipboard** from the **Send to** menu without selecting citations using the check box, PubMed will add all (up to 500 citations) of your search results to the Clipboard. The

Clipboard will be lost after one hour of inactivity on PubMed or any of the other Entrez databases.



PubMed uses cookies to add your selections to the clipboard. In order for you to use this feature your Web browser must be set to accept cookies.



Citations in the clipboard are represented by the search number #0, which may be used in Boolean search statements. For example, to limit the citations you have collected in the Clipboard to English language citations, use the following search:

#0 AND english [1a]



This does not affect or replace the Clipboard contents.

E-mail

To e-mail your results, click on specific citations and select E-mail from the **Send to** pull-down menu. You may e-mail up to 500 items. You may select the format, the sorting method, and HTML or text. In addition, you may enter a message that will be included with the PubMed search results in the e-mail message. The e-mail page reflects settings from the results page and can be modified.

After clicking the **Mail** button, the system returns you to your results page and displays a message confirming that the e-mail message was sent. Your PubMed results will be sent from the NCBI automatic mail server, Sent by Entrez [nobody@ncbi.nlm.nih.gov] with a "Subject" of PubMed Search Results. Do not reply to this message. This is not a functioning customer service e-mail address.



If you choose HTML, your PubMed e-mail message displays as a PubMed results page and includes hyperlinks to Related Articles, LinkOut, and other PubMed features. The recipient's e-mail program must be set for HTML view in order to properly view in HTML format.

Order

The **Order** function allows you to order the full-text copy of an article from a library in your area using the **Order Documents** feature of PubMed.



Prior to using this program, you must establish an agreement with a Loansome Doc participating library. During the registration process, you will have the opportunity to search for a Loansome Doc provider in your area (U.S. and International). Local fees may apply. To register, click Order Documents from the PubMed sidebar menu, then Loansome Doc under **Loansome Doc Options**, then Sign up! from the Loansome Doc screen.



Once you have registered with Loansome Doc, you can order citations by clicking the check box to the left of each citation you want to order. When you have finished marking your selections (you may move to other pages within your results), select Order from the **Send to**

menu, and click the **Send to** button. You may also use the Clipboard to collect items from multiple searches before ordering.



For some journals the full-text of articles are available via a PubMed link to the publisher's Web site. Publisher links for the full-text of the article are displayed on the Abstract or Citation display. You may also choose [LinkOut](#) from the Links pull-down menu to the right of each citation. LinkOut is a PubMed feature that links to outside sources for the full-text of the article, e.g., a publisher's Web site, as well as other resources such as biological databases and sequencing centers. User registration, a subscription fee, or some other type of fee may be required to access the full-text of articles in some journals.

Importing Citations into a Reference Manager Program

To import search results into a reference manager program, change the **Display** format to [MEDLINE](#), select [File](#) from the **Send to** pull-down menu, then click **Send to**. This format includes the field tags needed for these programs.

Consider changing the .fcgi extension to .txt if you wish to open the file in a text editor, word processing, or reference manager program.

Print

Use the print function of your Web browser to print all the information and citations displayed on your Web page. Before printing, consider using the Show (number of pages) Feature to increase the number of documents per page so that the total number of documents is displayed on one page (maximum: 500 per page). You can print only the citations from the displayed page.



You may also wish to display your citations as "Text" to strip the sidebar menu and toolbars prior to printing your results.



You may want to print selected items from one or more searches on a single page. You can do this by collecting them in PubMed's Clipboard.

TOXLINE

TOXLINE is NLM's bibliographic database for toxicology, providing information covering the biochemical, pharmacological, physiological, and toxicological effects of drugs and other chemicals. It contains over 4 million bibliographic citations from 1965 to the present, most with abstracts and/or indexing terms and Chemical Abstracts Service (CAS) Registry Numbers.

toxnet.nlm.nih.gov

TOXLINE Components

TOXLINE references come from various sources organized into components. These components are searched together but may be used to limit searches.

- ▶ **Standard biomedical/toxicology journal literature**
 - MEDLINE/PubMed
- ▶ **Special journal and other research literature**
 - Developmental and Reproductive Toxicology (DART)
 - International Labour Office (CIS)
- ▶ **Technical reports and research projects**
 - Federal Research in Progress (FEDRIP)
 - Toxic Substances Control Act of Test Submissions (TSCATS)
 - Toxicology Document and Data Depository (NTIS)

- Toxicology Research Projects (CRISP)
- ▶ **Meeting Abstracts**
- ▶ **Archival Collection (no longer being updated)**
 - Aneuploidy (ANEUPL)
 - Environmental Mutagen Information Center File (EMIC)
 - Environmental Teratology Information Center File (ETIC)
 - Epidemiology Information System (EPIDEM)
 - Hazardous Materials Technical Center (HMTc)
 - Health Aspects of Pesticides Abstract Bulletin (HAPAB)
 - International Pharmaceutical Abstracts (IPA)
 - NIOSHTIC (NIOSH)
 - Pesticides Abstracts (PESTAB)
 - Poisonous Plants Bibliography (PPBIB)
 - Swedish National Chemicals Inspectorate (RISKLINE)
 - Toxicological Aspects of Environmental Health (BIOSIS)

Searching TOXLINE

Any terms you enter in the query box will automatically be searched against both the keyword and MeSH fields, in addition to other fields such as title, abstract, and author. Chemical names are mapped to names, synonyms, and CAS Registry Numbers derived from ChemIDplus. Words such as “a,” “an,” “and,” “for,” “the,” and “it” will not be searched.

Limits may be applied to narrow your search to:

- ▶ Titles or authors
- ▶ Exact words or word variants
- ▶ Year of publication
- ▶ Documents added within a specified number of months
- ▶ TOXLINE components (more than one component can be selected)
- ▶ Language

You may also specify the maximum number of records you would like retrieved.

The screenshot shows the 'Search TOXLINE' web interface. It features a search bar at the top with 'Search', 'Clear', and 'Help' buttons. Below the search bar are checkboxes for 'Add chemical synonyms and CAS numbers to search:' (checked) and 'Include PubMed records:' (checked). The 'Search fields:' section has radio buttons for 'All fields' (checked), 'Titles', and 'Authors (e.g., Smith H)'. The 'Search:' section has radio buttons for 'exact words', 'singular & plural forms' (checked), and 'word variants'. The 'Search records with:' section has radio buttons for 'the phrase', 'all words' (checked), and 'any words'. There is a text input for 'Maximum records returned' set to 25000. The 'Year of Publication:' section has inputs for '1900' and '2008'. The 'Only search documents added in the last' section has an input for 'months'. The 'TOXLINE Components' section has a list box with 'All', 'ANEUPL', 'BIOSIS', 'CIS', 'CRISP', and 'DART (non-PubMed)' selected. The 'Language' section has a list box with 'All', 'English', 'Afrikaans', 'Arabic', 'Armenian', and 'Azerbaijani' selected. At the bottom, there are 'Search' and 'Browse the Index' buttons.

Search Results

Address: <http://toxnet.nlm.nih.gov/cgi-bin/sis/search>

TOXNET
Toxicology Data Network

SIS Home | About Us | Site Map & Search | Contact Us

Env. Health & Toxicology | TOXNET | TOXLINE

TOXLINE Search Results

toluidine bladder cancer Search Clear Limits

For chemicals, add synonyms and CAS numbers to search: ☒ Yes ☐ No
Include PubMed records: ☒ Yes ☐ No

Items 1 through 20 of 102
records are sorted in [relevancy ranked](#) order and not by date.
Click on Sort to change the order of the retrieved records.

Pages: 1 2 3 4 5 6

Select Record

1 ☐ [Excess number of bladder cancers in workers exposed to ortho-toluidine and aniline.](#)
Ward E; Carpenter A; Markowitz S; Roberts D; Halperin W
J Natl Cancer Inst. 1991, Apr 3; 83(7):501-6. [Journal of the National Cancer Institute] (PubMed)
[PubMed Citation](#)

2 ☐ [Monitoring of aromatic amine exposures in workers at a chemical plant with a known bladder cancer excess.](#)
Ward EM; Sabbioni G; DeBord DG; Teass AW; Brown KK; Talaska GG; Roberts DR; Ruster AM; Straincher RP

Your initial retrieval is displayed as a list—in relevancy ranked order—of bibliographic references with the titles in blue. Each reference is followed by the acronym [in brackets] of the component from which the article was retrieved. References coming from MEDLINE/PubMed will be marked PubMed citation with a green and blue M-encircled icon (M) and linked to the same reference in PubMed. Clicking on this link takes you to PubMed where you can use functions such as LinkOut, Related Links, and document ordering.

Selected Record Screen

TOXNET
Toxicology Data Network

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TOXLINE

toluidine bladder cancer Search Clear Limits

For chemicals, add synonyms and CAS numbers to search: ☒ Yes ☐ No
Include PubMed records: ☒ Yes ☐ No

Item 1 of 101 [PubMed Citation](#)

Excess number of bladder cancers in workers exposed to ortho-toluidine and aniline.

Authors:
[Ward E](#)
[Carpenter A](#)
[Markowitz S](#)
[Roberts D](#)
[Halperin W](#)

Author Address: Industrywide Studies Branch, National Institute for Occupational Safety and Health, Cincinnati, Ohio 45226.

Source: J Natl Cancer Inst. 1991, Apr 3; 83(7):501-6. [Journal of the National Cancer Institute]

Comments:
Comment in: J Natl Cancer Inst. 1991 Nov 20;83(22):1686-7 (medline/1749022)
Comment in: J Natl Cancer Inst. 1991 Oct 16;83(20):1507-8 (medline/1920498)
Comment in: J Natl Cancer Inst. 1994 Jan 5;86(1):59-62 (medline/8271286)

Abstract:
A retrospective cohort study of the incidence of bladder cancer was conducted in response to a union request for an evaluation of a possible excess number of cases of bladder cancer at a chemical plant in western New York State. Workers at the plant were exposed to two potential

Search terms are red

Linked terms are blue

Search terms are red

The record screen displays the complete record for the item you selected on the results screen. Your search terms are in red. Individual author names, MeSH headings, keywords, and CAS

Registry Numbers are in blue and linked to similar records in the database. Click an author link to find other articles by that author; Click a keyword to find other articles indexed with that keyword.

Other information appearing includes the article language, the month it was entered into the system, the year of publication, and a secondary source ID—a unique identifying number for the record and tagged to its component.

Additional Resources

For further information, we recommend these additional resources:

- ▶ [PubMed](http://pubmed.gov)
pubmed.gov
- ▶ [TOXLINE Fact Sheet](http://www.nlm.nih.gov/pubs/factsheets/toxlinfs.html)
www.nlm.nih.gov/pubs/factsheets/toxlinfs.html
- ▶ [Importing Citations into Reference Manager](http://sis.nlm.nih.gov/enviro/captivate/toxlinespecialimports.htm)
sis.nlm.nih.gov/enviro/captivate/toxlinespecialimports.htm
- ▶ [Free Full Text Health Science/Medical Journals](http://sis.nlm.nih.gov/pdf/FreeFullTextListApril07.pdf)
sis.nlm.nih.gov/pdf/FreeFullTextListApril07.pdf



TOXLINE Search Exercises

Search Example: Research records about cancer among agricultural workers. Do not include PubMed citations.

Suggested Solution:

- ▶ Go to toxnet.nlm.nih.gov
- ▶ Click **TOXLINE** in the **Select Database** column
- ▶ Type **cancer agricultural workers** in the search box
- ▶ Click the **No** button under Include PubMed records
- ▶ Click the **Search** button

The screenshot shows the TOXNET homepage with the following details:

- Select Database:** ChemIDplus, HSDB, **TOXLINE**, CCRIS, DART, GENETOX, IRIS, ITER, LactMed, Multi-Database, TRI, Haz-Map, Household Products, TOXMAP, TOXNET Home.
- Search TOXLINE:** Search box contains 'cancer agricultural workers'. Below it, 'Include PubMed records' is set to 'No'.
- Env. Health & Toxicology:** Portal to environmental health and toxicology resources.
- Support Pages:** Help, Fact Sheet, Sample Record, TOXNET FAQ, Importing Citations into Reference Manager.

- ▶ Review the citations
- ▶ Click the **Basic Search** button at the left of the page to prepare for the next search

The screenshot shows the TOXNET Search Results page with the following details:

- Search Results:** Search box contains 'cancer agricultural workers'. 'Include PubMed records' is set to 'No'.
- Items 1 through 20 of 925** (Page 1 of 47).
- records are sorted in relevance-ranked order and not by date.**
- Select Record:**
 - 1 ☐ [Women at Work: Agriculture and Pesticides](#)
McDuffie HH
Journal of Occupational Medicine. Vol. 36, No. 11, pages 1240-1246, 61 references, 1994 [NIOSH]
 - 2 ☐ [Swedish Agricultural Workers: A Group with a Decreased Risk of Cancer](#)
Wiklund K
Cancer. Vol. 51, No. 3, pages 566-568, 8 references, 1983 [NIOSH]
 - 3 ☐ [Deaths from Primary Brain Cancers, Lymphatic and Haematopoietic Cancers in Agricultural Workers in the Republic of Ireland](#)
Dean G
Journal of Epidemiology and Community Health. Vol. 48, No. 4, pages 364-368, 10 references, 1994 [NIOSH]
 - 4 ☐ [Testicular Cancer Among Agricultural Workers and Licensed Pesticide Applicators in Sweden](#)
Wiklund K, Dich J, Holm L-E
Scandinavian Journal of Work, Environment and Health. Vol. 12, No. 6, pages 630-631, 5 references, 1986 [NIOSH]
 - 5 ☐ [Epidemiologic Studies of Cancer in Agricultural Workers](#)
Pearce N, Reif JS
American Journal of Industrial Medicine. Vol. 18, No. 2, pages 133-148, 87 references.
- Left Sidebar:** Save Checked Items, Sort, Details, History, Download, Modify Search, **Basic Search**, Browse Index, Help, TOXNET Home.

Exercise 1: Locate recent articles focused on the effects of diet on breast cancer. Limit your search to articles published since 2007.

Suggested Solution:

Type	diet breast cancer in the search box
Click	the Limits button
Select	Titles under "Search fields."
Type	2007 in the first Year of Publication box (replacing "1900")
Click	the Search button
Review	record(s) of your choice
Click	the Basic Search button at the left of the page to prepare for the next search

Exercise 2: Search for the chemical of concern in baby bottles, *bisphenol A* (BPA). Explore navigating through your retrieval, examining individual records, and going to linked records.

Suggested Solution:

Type	bisphenol a AND baby bottles in the search box
Click	the Search button
Review	record(s) of your choice
Click	the Basic Search button at the left of the page to prepare for the next search

Exercise 3: Locate English citations on workers exposed to *caprolactam*

Suggested Solution:

Type	occupational exposure caprolactam in the search box
Click	the Limits button
Select	<u>English</u> in the Language box
Click	the Search button
Click	the Sort button in the left margin
Select	<u>Ascending</u> after Year of Publication
Click	Sort
Review	the citation(s)
Click	the Basic Search button at the left of the page to prepare for the next search

DART

DART is a bibliographic database that covers teratology and other aspects of developmental and reproductive toxicology. It contains over 200,000 references to literature published since 1965.

toxnet.nlm.nih.gov

DART has some of the same features as PubMed, including the following: MeSH searching; applying limits by field, publication type, age, gender, language, human or animal, etc.; MyNCBI to store and update search strategies; Related Records; LinkOut and Links to Books; and Interlibrary Loan (Loansome Doc).

Searching DART

Any term(s) you enter in the query box will automatically be searched against both the keyword and MeSH fields, in addition to other fields such as title, abstract, and author. Chemical names are mapped to names, synonyms, and CAS Registry Numbers derived from ChemIDplus. Words such as “a,” “an,” “and,” “for,” “the,” and “it” will not be searched.

Limits may be applied to narrow your search to:

- ▶ Titles
- ▶ Authors
- ▶ Exact words or word variants
- ▶ Year of publication
- ▶ Documents added within a specified number of months
- ▶ Language

You may also specify the maximum number of records you would like retrieved.

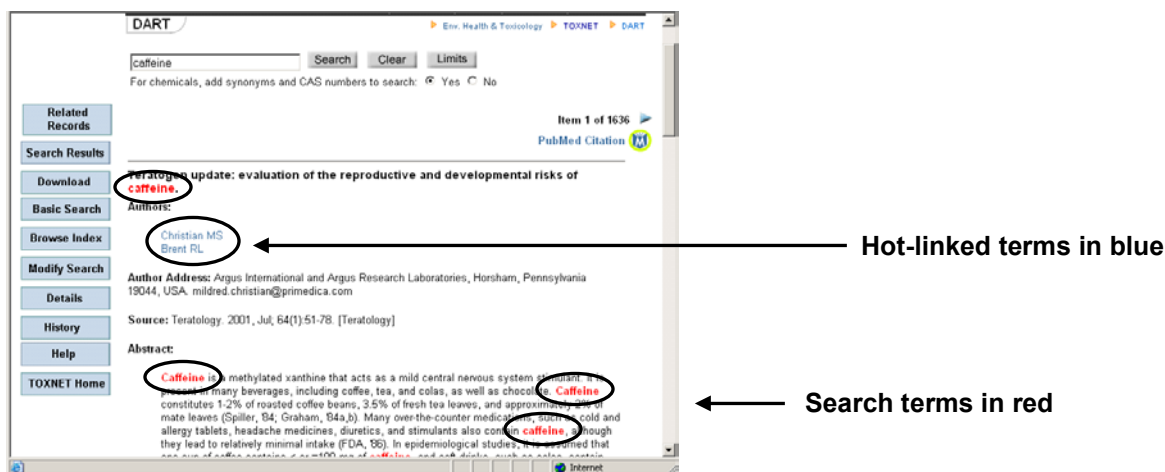
Search Results



The screenshot shows the DART Search Results interface. The search term 'caffeine' is entered in the search box. The results are displayed in a list format, sorted by relevancy. A callout box points to a green 'M' icon, which is a link to the PubMed citation for the selected record.


Your initial retrieval is displayed as a list—in relevancy ranked order—of bibliographic references with the titles in blue. Each reference is followed by the mnemonic [in brackets] of the subfile from which the article was retrieved. References that come from MEDLINE/PubMed have TOXLINE [PubMed] following the bibliographic citation. They also have PubMed Citation in blue and a green and blue M-encircled icon. This icon is linked to the same citation as it appears in PubMed. Click this icon to go to PubMed where you can use any of the PubMed functions such as LinkOut and document ordering.

Selected Record Screen



The screenshot shows the DART Selected Record screen for the record titled 'Teratogen update: evaluation of the reproductive and developmental risks of caffeine.' The screen displays the full record details, including the title, authors, source, and abstract. Callouts highlight 'Hot-linked terms in blue' (author names) and 'Search terms in red' (the word 'caffeine' in the title and abstract).

This screen displays the complete record for the item you selected on the Results Screen. Your search terms are in red. Individual author names, MeSH headings, keywords, and CAS Registry Numbers are in blue and linked to related records in the database. Click an author link to find other articles by that author; Click a keyword to find other articles indexed with that keyword. Other information on the page includes the article language, the month it was entered into the system, the year of publication, and a secondary source ID—a unique identifying number for the record and

tagged to its subfile. References from PubMed have the PubMed citation designation and the green-and-blue PubMed symbol ()

Additional Resources

For further information, we recommend these additional resources:

- ▶ DART Fact Sheet
www.nlm.nih.gov/pubs/factsheets/dartfs.html
- ▶ PubMed
pubmed.gov
- ▶ Importing citations into Reference Manager
sis.nlm.nih.gov/enviro/captivate/toxlinespecialimports.htm



DART Search Exercises

Search Example: Find information on the effects of alcohol on the fetus.

Suggested Solution:

- ▶ Go to toxnet.nlm.nih.gov
- ▶ Click **DART** in the **Select Database** column
- ▶ Type **alcohol fetus** in the search box
- ▶ Click the **Search** button

- ▶ Click the record of your choice to view the abstract
- ▶ Click the **Basic Search** button at the top of the page to prepare for the next search


Exercise 1: Find the latest citations pertaining to food allergies and prevention. Sort the citations by author in descending order.

Suggested Solution:

Type	food allergies prevention in the search box
Click	the Search button
Review	the citation(s)
Click	the Sort button on the left of the page
Select	Author and Descending order
Click	Sort
Review	the citations
Click	the Basic Search button at the top of the page to prepare for the next session


Exercise 2: Locate articles on psychomotor stimulants.

Suggested Solution:

Type	psychomotor stimulants in the search box
Click	the Search button
Review	the citation(s)
	 The results will be in relevancy ranked order.
Click	the Basic Search button at the left of the page to prepare for a new search

Exercise 3: Locate citations on the subject of eating fish while pregnant. Limit your search to English articles published in the years 2008-2010.

Suggested Solution:

Type	pregnancy fish consumption in the search box
Click	the Limits button
Delete	1900 in the Year of Publication box and type 2008
Select	<u>English</u> in the Language menu
Click	the Search button
Review	the citation(s)
	 The results will be in relevancy ranked order.
Click	The TOXNET Home button at the left of the page to prepare for a new session

More to Explore

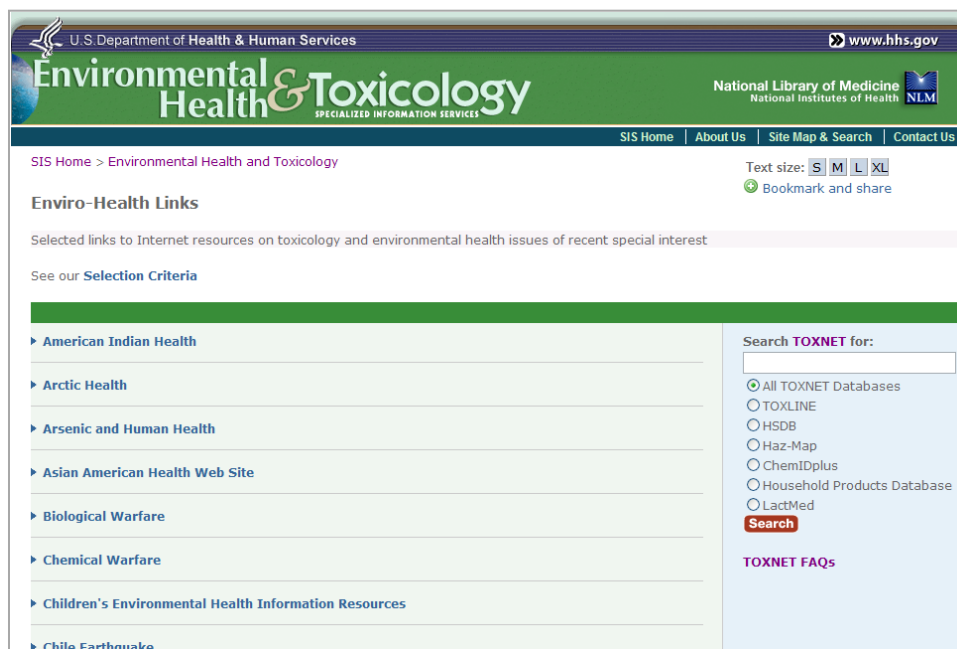


The National Library of Medicine

Web Resources for Environmental Health and Biomedical Research

Enviro-Health Links

Enviro-Health Links, available from the NLM Environmental Health and Toxicology Portal, is a list of links to Internet resources on toxicology and environmental health issues of recent special interest. All resources are evaluated and selected according to specific criteria. You may also search TOXNET from this page. From the Environmental Health and Toxicology Portal, click [Enviro-Health Links](#) under **More to Explore**.



sis.nlm.nih.gov/enviro/envirohealthlinks.html

Links to information of special interest include:

- ▶ Arsenic and Human Health
- ▶ Biological Warfare
- ▶ California Wildfires
- ▶ Chemical Warfare
- ▶ Dietary Supplements
- ▶ Health Effects from the Collapse of the World Trade Center
- ▶ Environmental Justice Internet Guide
- ▶ Hurricanes: Links to Health Information
- ▶ Indoor Air Pollution
- ▶ Keeping the Artist Safe: Hazards of Arts and Crafts Materials
- ▶ Lead and Human Health
- ▶ Mercury and Human Health
- ▶ Outdoor Air Pollution
- ▶ Pesticide Exposure
- ▶ Special Populations: Emergency and Disaster Preparedness
- ▶ Tornadoes
- ▶ Toxicogenomics
- ▶ West Nile Virus: Pesticides Used for Mosquito Control

ToxSeek

[ToxSeek®](#) is a free meta-search engine developed by the [Division of Specialized Information Services](#) at the [National Library of Medicine](#). ToxSeek enables users to search across diverse biomedical and environmental health resources and provides a method for efficiently locating information resources on topics related to toxicology and environmental health. ToxSeek uses natural language processing and artificial intelligence to retrieve, integrate, rank, and present search results as coherent and dynamic sets.

NLM			
<input checked="" type="checkbox"/> HSDB	<input checked="" type="checkbox"/> TOXLINE	<input checked="" type="checkbox"/> AltBib	<input checked="" type="checkbox"/> CCRIS
<input checked="" type="checkbox"/> ChemIDplus	<input checked="" type="checkbox"/> DART	<input checked="" type="checkbox"/> GENE-TOX	<input checked="" type="checkbox"/> Haz-Map
<input checked="" type="checkbox"/> Household Products	<input checked="" type="checkbox"/> ITER	<input checked="" type="checkbox"/> TRI	<input checked="" type="checkbox"/> LactMed
<input checked="" type="checkbox"/> MedlinePlus Dictionary	<input checked="" type="checkbox"/> Arctic Health	<input checked="" type="checkbox"/> Bookshelf	<input checked="" type="checkbox"/> ClinicalTrials
<input checked="" type="checkbox"/> MedlinePlus	<input checked="" type="checkbox"/> PubMed	<input checked="" type="checkbox"/> PubMed Central	<input checked="" type="checkbox"/> NLM Catalog

NIH	
<input checked="" type="checkbox"/> NCI	<input checked="" type="checkbox"/> NIEHS

U.S. Government			
<input checked="" type="checkbox"/> AgNIC	<input checked="" type="checkbox"/> ATSDR	<input checked="" type="checkbox"/> CDC	<input checked="" type="checkbox"/> CDC - NIOSH
<input checked="" type="checkbox"/> CDC - elCosh	<input checked="" type="checkbox"/> CDC - NASD	<input checked="" type="checkbox"/> CPSC	<input checked="" type="checkbox"/> CSB
<input checked="" type="checkbox"/> DOE	<input checked="" type="checkbox"/> DOE -	<input checked="" type="checkbox"/> DOE -	<input checked="" type="checkbox"/> DOL -

toxseek.nlm.nih.gov

ToxSeek allows users to search in a wide range of authoritative sources in these categories:

- ▶ **NLM TOXNET**—Databases on hazardous chemicals, toxic releases and environmental health from the National Library of Medicine (NLM)
- ▶ **Other NLM**—Additional selected resources from NLM, including PubMed
- ▶ **NIH**—Resources from other institutes of the National Institutes of Health (NIH)
- ▶ **U.S. Government**—Toxicology/environmental health information from other United States government agencies
- ▶ **International**—Other selected international resources, such as the World Health Organization (WHO)
- ▶ **Other Resources**—Other topic-specific information resources



ToxSeek Search Exercise

Search Example: Locate information on hydrazine sulfate, an alternative treatment for cancer. Limit the search to TOXNET and other NLM resources. Review the HSDB records.


Suggested Solution:

- ▶ Go to toxseek.nlm.nih.gov
- ▶ Type **air pollution** in the search box
- ▶ By default all ToxSeek selected resources: NLM, NIH, U.S. Government, International, and Other Resources are selected
- ▶ Click the **Search** button

- ▶ Click U.S. Government

- ▶ Click ATSDR listed at the top of the page

- Review the records
- Close the pop-up window

CDC Home

Centers for Disease Control and Prevention
Your Online Source for Credible Health Information

A-Z Index: A B C D E F G H I J K L M N O P Q R S T U V W X Y Z #

Search Results

[Return to ATSDR](#)
 You searched for: **air pollution**
 Search again: Need help? [Search Tips](#)
☒ ATSDR only ☐ All CDC documents

Note: The results below are only those items found within ATSDR. For a wider search of the CDC website, select 'All CDC documents' and search again.

Results 1 - 10 of about 1590

[ATSDR - Air](#)
Air pollution. Ever since people first gathered in settlements there has been **pollution**. ...
 top. The major types of **air pollution** are: ...
www.atsdr.cdc.gov/general/theair.html

[Taking an Exposure History - What Are the Possible Sources ...](#)
 Upon completion of this section, you will be able to identify the possible sources of toxicants from indoor **air pollution**. ...
www.atsdr.cdc.gov/csem/exphistory/ehindoor_pollution.html

Air pollution How does **air pollution** affect me? The **Air Quality** ...
Air pollution Ever since people first gathered in settlements there has been **pollution**. ...
 How does **air pollution** affect me? ...
www.atsdr.cdc.gov/general/theair.pdf

Text size: [S](#) [M](#) [L](#) [XL](#)
[Email page](#)
[Print page](#)
[Bookmark and share](#)

08:22 on 08/08
4 CDC Info
Txt: HEALTH
To: 87000
[LEARN MORE](#)

Search Tips

To conduct more precise search queries...

- Keep searches simple: one to three

ALTBIB

ALTBIB is a searchable bibliographic collection on alternatives to animal testing. It includes citations from published articles, books, book chapters, and technical reports from 1980 to 2000. Citations were selected manually after searching various [National Library of Medicine](#) (NLM) bibliographic databases. The bibliography features citations concerning methods, tests, assays, and procedures that may prove useful in establishing alternatives to the use of intact vertebrates. ALTIB has not been updated since 2001 because new features were added to [PubMed®/MEDLINE®](#) to assist users in searching and retrieving directly from the file. Search strategies for some animal alternatives have been developed and incorporated in the ALTIB search interface.

The screenshot shows the ALTIB web interface. At the top, there is a header with the NLM logo and the text "United States National Library of Medicine". To the right, the "ALTBIB" logo is displayed with the subtitle "Bibliography on Alternatives to Animal Testing". Below the header, there is a navigation bar with links: "SIS Home", "About Us", "Site Map & Search", and "Contact Us". A secondary navigation bar includes "Env. Health & Toxicology" and "ALTBIB".

The main content area is titled "ALTBIB - Resources on Alternatives to the Use of Live Vertebrates in Biomedical Research and Testing." It is divided into two columns. The left column, "Search ALTIB & PubMed", contains a search form with the instruction "Enter search terms. Select ALTIB or PubMed:". There is a text input field, a "Search" button, and a "Clear" button. Below the input field, an example is given: "(e.g. Corrositex, 'androgen receptor binding assay')". There are two radio button options for limiting the search: "ALTIB (up to 2000)" (selected) and "PubMed (with animal alternatives search strategy)". Under the ALTIB option, there is a dropdown menu for "Any Year up to 2000" and another dropdown for "All Categories". Under the PubMed option, there are checkboxes for "2000 to Present", "Animal Use Alternatives (MeSH)", and "Toxicology Subset". At the bottom of the search section are buttons for "Search", "Browse the Index", and "Help", along with a link to "View/Edit PubMed Search Strategy".

The right column, "News and Features", lists several items: "27 Apr 2009: Countries Unite to Reduce Animal Use in Product Toxicity Testing Worldwide (NIEHS)", "Since You Asked - Alternatives to Animal Testing — Questions and Answers about ICCVAM (NIEHS)", and "Additional Resources". The "Additional Resources" section lists: "ALTWEB - Alternatives to Animal Testing on the Web", "Animal Welfare Information Center (USDA)", "ECVAM - European Centre for the Validation of Alternative Methods", "FRAME - Fund for the Replacement of Animals in Medical Experiments", "ICCVAM - Interagency Coordinating Committee for the Validation of Alternative Methods (HHS/NIH/NIEHS)", "Johns Hopkins Center for Alternatives to Animal Testing", "University of California Center for Animal Alternatives", and "Society of Toxicology - Awards in Alternative Methods".

At the bottom of the interface, there are two green buttons: "Live PubMed Searches on Selected Topics" and "Support Pages".

toxnet.nlm.nih.gov/altbib.html

Searching HSDB

Search ALTIB (1980 to 2000) by term or by one of these 15 categories:

- ▶ General
- ▶ Carcinogenesis
- ▶ Cytotoxicity
- ▶ Dermal Toxicity

- ▶ Ecotoxicity
- ▶ Genotoxicity
- ▶ Hepatic and Renal Toxicity
- ▶ Immunotoxicity and immunology
- ▶ Neurotoxicity
- ▶ Ocular Toxicity
- ▶ Pharmacokinetic and Mechanistic Studies
- ▶ Pulmonary Toxicity
- ▶ Quantitative Structure Activity Relationships
- ▶ Reproductive and Developmental Toxicity
- ▶ Animal Welfare

You can also search MEDLINE/PubMed from the ALTBIB page by selecting “PubMed (with animal alternative search strategy). The search can be limited by date (**2000 to Present**), **Animal Use Alternatives (MeSH)**, and **Toxicology Subset**. Search strategies incorporated in the ALTBIB search interface can be seen by clicking on the **Details** tab on the PubMed search results page.



ALTBIB Search Exercises

Search Example: Find bibliographic articles that emphasize alternative uses for cytotoxicity research.

Suggested Solution:

- ▶ Go to sis.nlm.nih.gov/enviro.html
- ▶ Click "ALTBIB" under **Other Professional Resources**
- ▶ Type **cytotoxicity** in the search box
- ▶ Click the **Search** button

- ▶ Review a record of your choice
- ▶ Click the **Basic Search** button at the left of the page to prepare for the next search

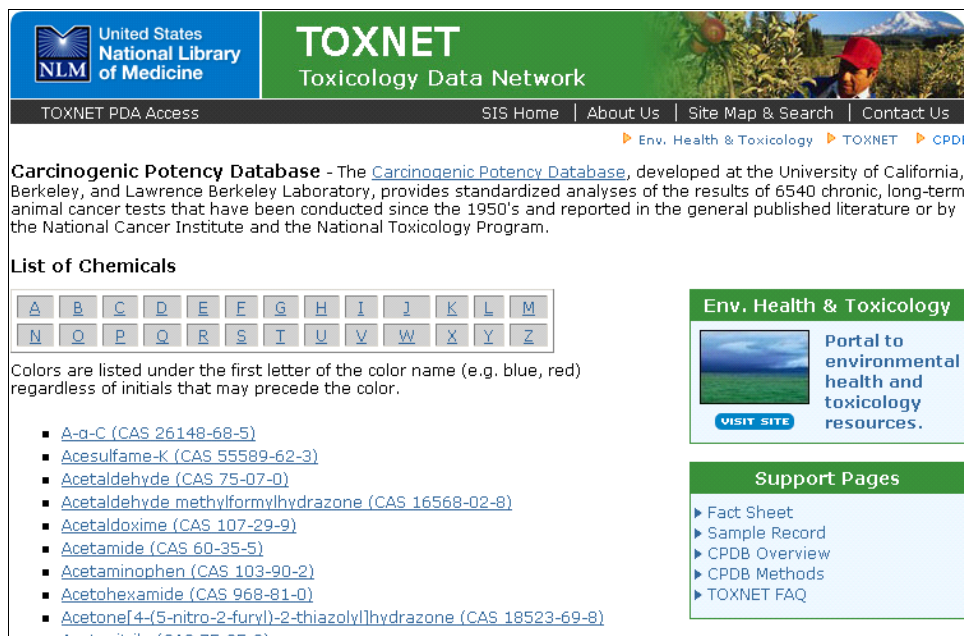
Exercise 1: Using the limit feature, locate an article on genotoxicity and mutagenesis dated 1998-2000.

Suggested Solution:

Type	genotoxicity AND mutagenesis in the search box
Select	1998-2000 from the year pull-down menu under ALTBIB
Click	the Search button
Review	a record of your choice
Click	the TOXNET Home button to the left of the page to prepare for the next session

Carcinogenic Potency Database

The **Carcinogenic Potency Database (CPDB)**, developed at the University of California, Berkeley, and Lawrence Berkeley Laboratory, provides standardized analyses of the results of 6540 chronic, long-term animal cancer tests (both positive and negative for carcinogenicity) that have been conducted since the 1950's and reported in the general published literature or by the National Cancer Institute and the National Toxicology Program.



The screenshot shows the TOXNET website interface. At the top, there is a header with the United States National Library of Medicine logo and the TOXNET Toxicology Data Network title. Below the header, there is a navigation bar with links to TOXNET PDA Access, SIS Home, About Us, Site Map & Search, and Contact Us. The main content area features a section for the Carcinogenic Potency Database, which includes a description of the database and a list of chemicals. The list of chemicals is organized by the first letter of the color name (e.g., blue, red) and includes links to the full record for each chemical. On the right side of the page, there is a sidebar with links to Env. Health & Toxicology, a Portal to environmental health and toxicology resources, and Support Pages.

United States National Library of Medicine

TOXNET
Toxicology Data Network

TOXNET PDA Access | SIS Home | About Us | Site Map & Search | Contact Us

Env. Health & Toxicology | TOXNET | CPDB

Carcinogenic Potency Database - The [Carcinogenic Potency Database](#), developed at the University of California, Berkeley, and Lawrence Berkeley Laboratory, provides standardized analyses of the results of 6540 chronic, long-term animal cancer tests that have been conducted since the 1950's and reported in the general published literature or by the National Cancer Institute and the National Toxicology Program.

List of Chemicals

A	B	C	D	E	F	G	H	I	J	K	L	M
N	O	P	Q	R	S	T	U	V	W	X	Y	Z

Colors are listed under the first letter of the color name (e.g. blue, red) regardless of initials that may precede the color.

- [A-g-C \(CAS 26148-68-5\)](#)
- [Acesulfame-K \(CAS 55589-62-3\)](#)
- [Acetaldehyde \(CAS 75-07-0\)](#)
- [Acetaldehyde methylformylhydrazone \(CAS 16568-02-8\)](#)
- [Acetaldoxime \(CAS 107-29-9\)](#)
- [Acetamide \(CAS 60-35-5\)](#)
- [Acetaminophen \(CAS 103-90-2\)](#)
- [Acetohexamide \(CAS 968-81-0\)](#)
- [Acetone\[4-\(5-nitro-2-furyl\)-2-thiazolyl\]hydrazone \(CAS 18523-69-8\)](#)
- [Acetonitrile \(CAS 75-05-8\)](#)

Env. Health & Toxicology

Portal to environmental health and toxicology resources.

[VISIT SITE](#)

Support Pages

- Fact Sheet
- Sample Record
- CPDB Overview
- CPDB Methods
- TOXNET FAQ

toxnet.nlm.nih.gov

Searching CPDB

Search by chemical name or fragment, or Chemical Abstracts Service Registry Number. Results include a summary for each sex-species tested, including carcinogenicity, target organs, and carcinogenic potency values. Detailed results from each experiment on that particular chemical are given in a plot format suitable for screen viewing.

Additional Resource

For further information, we recommend this additional resource:

- [Carcinogenic Potency Database Fact Sheet](http://www.nlm.nih.gov/pubs/factsheets/cpdbfs.html)
www.nlm.nih.gov/pubs/factsheets/cpdbfs.html

Haz-Map

Haz-Map is an occupational health database designed for health and safety professionals and for consumers seeking information about the health effects of exposure to chemical and biological agents used in industry, on the job and at home. Haz-Map lists more than 3,200 chemical/biological agents with links to at-risk occupations and approximately 225 associated occupational diseases and their symptoms. The database was compiled from information from occupational medicine textbooks, journal articles, and electronic databases.

Haz-Map Search
More Searches
Haz-Map Help
Glossary
References

Browse Haz-Map

- **Hazardous Agents**
 - 1. [By Types of Agents](#)
 - 2. [By Adverse Effects](#)
 - 3. [Alphabetically](#)
- **Occupational Diseases**
 - 1. [By Types of Diseases](#)
 - 2. [By Jobs and Symptoms](#)
 - 3. [Alphabetically](#)
- **High Risk Jobs**
 - 1. [By Types of Jobs](#)
 - 2. [Alphabetically](#)

Agents: Chemical and biological agents

Diseases: Medical conditions and symptoms based on the International Classification of

Jobs: High risk jobs and tasks that could result

hazmap.nlm.nih.gov

Searching Haz-Map

as

You can search Haz-Map by keyword, agent, disease, or job from almost any page of the site. Simply enter your query in the search box and click the appropriate button (**Agent**, **Disease**, **Job**, or **Text Search**) to the right of “as.” You can also browse alphabetically in each category or by Types of Agents, Adverse Effects, Types of Diseases, Jobs and Symptoms, or Types of Jobs by clicking the appropriate link (see above).

Special features for chemical searching: If there is an exact match of an agent name with the query, the primary record will be returned first in the search results. If the search query is enclosed by double quotes (“”), only the primary record will be displayed. You can also search a chemical by its CAS Registry Number.

Other categories: Click the More Searches tab for additional categories of information, including Activities, Industries, Job Tasks, Processes, and Symptoms. The query words will be searched as text words in the selected category and the results will display in relevancy ranked order.

Browse Haz-Map	
Job Task Name	Dye or bleach hair, or use ethanolamines in beauty culture
Comments	Occupational asthma caused by ammonium persulphate, henna, and ethanolamine has been reported. [Malo]
Job Task Category	Beauty Culture
Exposed To	Allergens
Related Information in Haz-Map	
Diseases	Diseases associated with this job task: <ul style="list-style-type: none"> Asthma, occupational
Jobs	Jobs associated with this job task: <ul style="list-style-type: none"> Hairdressers, Hair Stylists & Cosmetologists
Industries	Industries associated with this job task: <ul style="list-style-type: none"> Beauty Salons Cosmetology and Barber Schools

Search TOXNET

Click the **Search TOXNET** button to search all TOXNET databases. Enter search words in the pop-up prompt box:

Explorer User Prompt

Script Prompt:

Enter text to search TOXNET. You can also highlight a term on this web page before clicking on this button.

OK

Cancel

Additional Resources

For further information, we recommend these additional resources:

[Haz-Map Help](#)

hazmap.nlm.nih.gov/hazhelp.html

[Haz-Map Brochure](#)

hazmap.nlm.nih.gov/635906-brochure.pdf

[Sources of Information for Haz-Map](#)

hazmap.nlm.nih.gov/hazref.html



Haz-Map Search Exercises

Search Example: What are some of the occupational diseases associated with working as a biology technician?

Suggested Solution:

- ▶ Go to hazmap.nlm.nih.gov
- ▶ Click **By Jobs and Symptoms** under **Occupational Diseases**



- ▶ Select **biology technicians** from the “**Select a job**” pull-down menu
- ▶ Click the **Search** button



- ▶ Review the results
- ▶ Click the **Haz-Map Search** tab to conduct a new search






Exercise 1: What are some high risk tasks associated with chemical technicians?

Suggested Solution:

- | | |
|--------|--|
| Click | <u>Alphabetically</u> under High Risk Jobs |
| Click | <u>C</u> |
| Click | <u>Chemical Technicians</u> |
| Click | the high risk job task of your choice |
| Review | the information |
| Click | the Haz-Map Search tab to prepare for the next search |

Exercise 2: What are some of the agents, jobs, and diseases associated with lung cancer? Perform a text search.

Suggested Solution:

- | | |
|--------|---|
| Type | lung cancer in the search box |
| Click | Text Search to the right of the search box |
| |  Results are sorted in relevancy ranked order. |
| Scroll | down the page and view the list of records under each category |
| |  The categories are Agents, Diseases, Jobs, Findings, Activities, Job Tasks and Processes. |
| Click | the record of your choice under list of Agents |
| Review | the results |
| Click | the browser's Back button to return to the Search Results Page |
| |  Repeats steps above to view lists of diseases and jobs. |

Exercise 3: How can I find information on hazardous agents used in painting?

Suggested Solution:

- | | |
|--------|--|
| Click | the More Searches tab |
| Click | <u>By Types of Processes</u> (under Processes) |
| Click | <u>Paint</u> |
| Click | <u>Painting (Solvents)</u> |
| Review | the record |

Household Products Database

Household Products Database contains links for over 9,000 consumer brands of household products to health effects from Material Safety Data Sheets (MSDS) provided by the manufacturers.

The screenshot shows the homepage of the Household Products Database. The header includes the U.S. Department of Health & Human Services logo, the website title, and the URL www.hhs.gov. Below the header is a navigation toolbar with tabs for Home, Products, Manufacturers, Ingredients, and Health Effects. The main content area features a 'Quick Search' box, a 'Browse by Category' list, and a grid of product categories with images and descriptions. Annotations with red lines point to specific features: 'Advanced Search' points to the 'Advanced Search' link in the left sidebar; 'More Resources' points to the 'More Resources' link at the bottom of the sidebar; and 'Navigation Toolbar' points to the top navigation tabs.

Advanced Search

More Resources

Navigation Toolbar

U.S. Department of Health & Human Services
www.hhs.gov
Household Products Database
Health & Safety Information on Household Products
National Institutes of Health
National Library of Medicine
Specialized Information Services
NLM

Home Products Manufacturers Ingredients Health Effects

Quick Search
Product, Manufacturer etc...
Go

Advanced Search

Browse by Category
Auto Products
Inside the Home
Pesticides
Landscape/Yard
Personal Care
Home Maintenance
Arts & Crafts
Pet Care
Home Office

Browse A-Z
Product Names
Types of Products
Manufacturers
Ingredients

Support
About the Database
FAQ
Product Recalls
Help
Glossary
Contact Us
More Resources

What's under your kitchen sink, in your garage, in your bathroom, and on the shelves in your laundry room? Learn more about what's in these products, about potential health effects, and about safety and handling.

Auto Products
Brake Fluid, De-Icer, Lubricant, Sealant, and more...

Inside the Home
Air Freshener, Bleach, Cleaners, Toilet Bowl Cleaner, and more...

Pesticides
Animal Repellent, Fungicide, Herbicide, Insecticide, and more...

Landscape/Yard
Fertilizer, Lawn Care, Swimming Pool Products, and more...

Personal Care
Antiperspirant, Hair Spray, Makeup, Shampoo, Soap and more...

Home Maintenance
Caulk, Grout, Insulation, Paint, Putty, Stain, and more...

Arts & Crafts
Adhesive, Glaze, Glue, Primer, Varnish, and more...

Pet Care
Flea & Tick Control, Litter, Stain/Odor Remover, and more...

Home Office
Ink, Toner, Correction Fluid, Electronics Cleaners, Pens and more...

For advice if someone is poisoned, call your local Poison Center at 1-800-222-1222.

Home | Products | Manufacturers | Ingredients | Health Effects

hpd.nlm.nih.gov

Household Products Database is designed to help answer the following typical questions:

- What are the chemical ingredients and their percentage in specific brands?
- Which products contain specific chemical ingredients?
- Who manufactures a specific brand? How do I contact this manufacturer?
- What are the acute and chronic effects of chemical ingredients in a specific brand?
- What other information is available about chemicals in the toxicology-related databases of the National Library of Medicine?

Searching Household Products Database

The Household Products Database is divided into four categories: **Products**, **Manufacturers**, **Ingredients**, and **Health Effects**. Navigate to a category by clicking the appropriate tab at the top of the page.

Search Household Products by using the Quick Search box on the home page or by selecting the Advanced Search link for a more detailed search. Clicking the **Health Effects** tab will bring up the Advanced Search screen with the Health Effects category selected for searching.

Browse Household Products by product category or alphabetically by product names, types of products, manufacturers, or ingredients (see left sidebar).

Additional Resources

For further information, we recommend these additional resources:

MSDS Information Resources

- [SIRI MSDS Archive](http://hazard.com/msds)
hazard.com/msds
- [MSDSprovider: Free Access to Manufacturer-Direct MSDSs](http://www.msdsprovider.com)
www.msdsprovider.com

Government Information Resources

- [OSHA's MSDS Regulation – Hazard Communication 1910.1200](http://osha.gov/pls/oshaweb/owadisp.show_document?p_table=STANDARDS&p_id=10099&p_text_version=FALSE)
osha.gov/pls/oshaweb/owadisp.show_document?p_table=STANDARDS&p_id=10099&p_text_version=FALSE
- [Read the Label First! Campaign \(EPA\)](http://www.epa.gov/oppt/labeling/pubs/campaign.htm)
www.epa.gov/oppt/labeling/pubs/campaign.htm
- [Household Hazardous Waste \(EPA\)](http://www.epa.gov/epawaste/conserve/materials/hhw.htm)
www.epa.gov/epawaste/conserve/materials/hhw.htm

From the National Library of Medicine

- [TOXNET—databases in toxicology and environmental health](http://toxnet.nlm.nih.gov)
toxnet.nlm.nih.gov
- [Tox Town—an interactive guide to commonly encountered toxic substances](http://toxtown.nlm.nih.gov)
toxtown.nlm.nih.gov

Product Recalls

- [Product Safety and Recall Lists](http://hpd.nlm.nih.gov/recalls.htm)
hpd.nlm.nih.gov/recalls.htm



Household Products Database Search Exercises

Search Example: What household products are associated with asthma?

Suggested Solution:

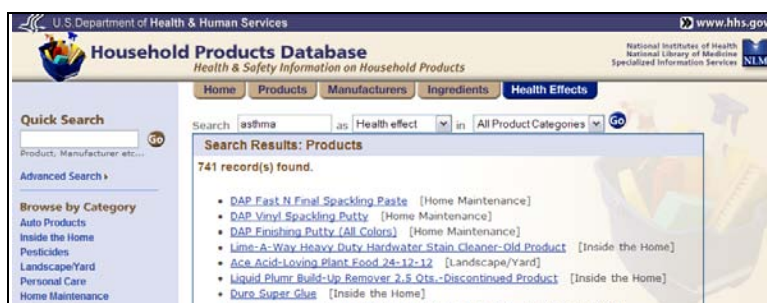
- Go to hpd.nlm.nih.gov
- Click the **Health Effects** tab



- Type **asthma** in the search box
- Click the **Search** button



- Click a product of your choice and review the information under **Health Effects**
- Click the **Home** tab at the top of the page to prepare for the next search



Exercise 1: How do I do a quick search to find information on herbicides?

Suggested Solution:

- Type **herbicide** in the search box
- Click the **Go** button
- Review record(s) of your choice
- Click the **Home** tab to prepare for the next search

Exercise 2: What home maintenance products contain *calcium sulfate*?

Suggested Solution:

- Click the **Ingredients** tab
- Click C
- Click calcium sulfate
- Click the brand name of your choice and review the record
- Click the **Home** tab to prepare for the next search

Exercise 3: How can I find information about specific brands of antibacterial hand soap, including their manufacturing information, ingredients, and health effects?

Suggested Solution:

- Click the **Personal Care** category
- Click Soap
- Click Antibacterial in the **Type** column
- Click a **Product Name** of your choice
- Review the information

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Additional Resources



Selected Resources in Environmental Health and Toxicology

Biostatistics and Epidemiology

Bureau of Labor Statistics (BLS)stats.bls.gov
 CDC Wonder.....wonder.cdc.gov
 Centers for Disease Control and Prevention (CDC) cdc.gov
 Comprehensive Epidemiologic Data Resource (CEDR) <https://www.orau.gov/cedr>
Morbidity and Mortality Weekly Report (MMWR)..... cdc.gov/mmwr/mmwr.html
 National Center for Health Statistics (NCHS)cdc.gov/nchs
 World Health Organization (WHO) who.int

Bioterrorism and Disaster Medicine

Institute for Biosecurity bioterrorism.slu.edu
 Radiation Emergency Medical Management (REMM) remm.nlm.gov

Consumer Information

American Lung Association (ALA).....lungusa.org
 Environmental Health Clearinghouse infoventures.com
 Federal Citizen Information Center (FCIC)pueblo.gsa.gov
 U.S. Consumer Product Safety Commission (CPSC).....cpsc.gov

Environmental Health

American Lung Association (ALA).....lungusa.org
 American Public Health Association (APHA) apha.org
 American Public Works Association (APWA) apwa.net
 Comprehensive Epidemiologic Data Resource (CEDR) <https://www.orau.gov/cedr>
 Duke Occupational & Environmental Medicine dukeocmed.mc.duke.edu
 Enviro-Net (Southeast U.S.)..... enviro-net.com
 Environmental Fate Databases & more (from Syracuse Research Corporation)
 syrres.com/Esc/efdb.htm
 Environmental Health Clearinghouse infoventures.com
 Environmental Protection Agency (EPA) epa.gov
 Environmental Protection Magazine Online..... eponline.com

Free Full Text Health Science/Medical Journals

(from the National Library of Medicine)	sis.nlm.nih.gov/pdf/FreeFullTextListApril07.pdf
International Agency for Research on Cancer (IARC)	iarc.fr
National Center for Environmental Health (NCEH).....	cdc.gov/nceh
National Environmental Data Index (NEDI)	nedi.gov
National Institute of Environmental Health Sciences (NIEHS)	niehs.nih.gov
NIH RePORTER (Research Portfolio online Reporting Tools) ..	projectreporter.nih.gov/reporter.cfm
Office of Environmental Management (EM).....	em.doe.gov
Organisation for Economic Co-operation and Development's (OECD's) Work on Environment, Health and Safety.....	oecd.org/ehs
Specialized Information Services (SIS), National Library of Medicine (NLM).....	sis.nlm.nih.gov
United Nations Environment Programme (UNEP)	unep.org
Water Resources of the United States	water.usgs.gov
World Health Organization (WHO)	who.int

General Information

FedWorld (Federal government information locator from the National Technical Information Service [NTIS])	fedworld.gov
The National Academies	nas.edu
National Agricultural Library (NAL)	nalusda.gov
National Institutes of Health (NIH)	nih.gov
National Library of Medicine (NLM)	nlm.nih.gov
U.S. Department of Energy (DOE)	energy.gov
U.S. Department of Health & Human Services (DHHS).....	dhhs.gov
U.S. Department of Labor (DOL).....	dol.gov
U.S. Department of Transportation (DOT).....	dot.gov
World Health Organization (WHO)	who.int

Genetic Information

Genetics Home Reference	ghr.nlm.nih.gov
Human Genome Resources.....	ncbi.nlm.nih.gov/projects/genome/guide/human/
National Human Genome Research Institute	genome.gov/11510197
Office of Rare Diseases (NIH).....	rarediseases.info.nih.gov

Occupational Health and Safety

American Industrial Hygiene Association (AIHA)	aiha.org
Bureau of Labor Statistics (BLS)	stats.bls.gov
Canadian Centre for Occupational Health and Safety (CCOHS)	ccohs.ca
Duke Occupational & Environmental Medicine	dukeoccmed.mc.duke.edu
Finnish Institute of Occupational Health (FIOH)	tth.fi/en
Health and Safety Executive (HSE)	hse.gov.uk
Injury Control Resource Information Network (ICRIN)	injurycontrol.com/icrin
International Occupational Safety and Health Information Centre (CIS)	ilo.org/public/english/protection/safework/cis/
International Programme for Chemical Safety (IPCS) INCHEM	inchem.org
Laboratory Chemical Safety Summaries (LCSS)	hhmi.org
Mine Safety and Health Administration (MSHA)	msha.gov
National Agricultural Library (NAL)	nalusda.gov
National Institute for Occupational Safety and Health (NIOSH)	cdc.gov/niosh
Occupational Safety and Health Administration (OSHA)	osha.gov
OshWeb (Occupational Safety & Health)	oshweb.com
Vermont Safety Information Resources, Inc. (SIRI)	hazard.com
Where to find Material Safety Data Sheets on the Internet	ilpi.com/msds

Research

International Agency for Research on Cancer (IARC)	iarc.fr
Laboratory Chemical Safety Summaries (LCSS)	hhmi.org
National Center for Toxicological Research (NCTR)	fda.gov/AboutFDA/CentersOffices/nctr/default.htm
National Institute of Environmental Health Sciences (NIEHS)	niehs.nih.gov
National Institutes of Health (NIH)	nih.gov
National Toxicology Program (NTP)	ntp-server.niehs.nih.gov
NIH RePORTER (Research Portfolio online Reporting Tools)...	projectreporter.nih.gov/reporter.cfm
Office of Human Radiation Experiments	hss.energy.gov/healthsafety/ohre/
Human Subjects Protection Program (Department of Energy)	humansubjects.energy.gov/

Standards

International Organization for Standardization (ISO) iso.ch
 National Standards System Network (NSSN) nssn.org

Toxicology

Agency for Toxic Substances and Disease Registry (ATSDR) atsdr.cdc.gov
 Canadian Poisonous Plants Information System cbif.gc.ca/pls/pp/poison
 Carcinogenic Potency Project (CPDB) potency.berkeley.edu/cpdb.html
 Center for Food Safety and Applied Nutrition (CFSAN) cfsan.fda.gov
 Chemfinder chembiofinder.cambridgesoft.com
 Comprehensive Epidemiologic Data Resource (CEDR) <https://www.ora.gov/cedr>
 Food and Drug Administration (FDA) fda.gov
 Human Subjects Protection Program (Department of Energy) humansubjects.energy.gov/
 Injury Control Resource Information Network (ICRIN) injurycontrol.com/icrin
 International Agency for Research on Cancer (IARC) iarc.fr
 Laboratory Chemical Safety Summaries (LCSS) hhmi.org
 National Center for Toxicological
 Research (NCTR) fda.gov/AboutFDA/CentersOffices/nctr/default.htm
 National Toxicology Program (NTP) ntp-server.niehs.nih.gov
 NIH RePORTER (Research Portfolio online Reporting Tools) .. projectreporter.nih.gov/reporter.cfm
 Office of Human Radiation Experiments hss.energy.gov/healthsafety/ohre/
 Organisation for Economic Co-operation and Development's (OECD's)
 Work on Environment, Health and Safety oecd.org/ehs
 Pesticide Action Network Pesticide Database (PAN) pesticideinfo.org
 Specialized Information Services (SIS), National Library of Medicine (NLM) sis.nlm.nih.gov
 United Nations Environment Programme (UNEP) unep.org
 U.S. Department of Transportation (DOT) dot.gov
 Vermont Safety Information Resources, Inc. (SIRI) hazard.com

Selected Commercial Web Sites and Databases on Environmental Health and Toxicology-Related Information

Ariel WebInsight—3ecompany.com/products-services/decision-support-tools/ariel-webinsight/

A subscription-based online chemical regulatory compliance reference tool with an easy-to-use interface with robust search, query, reporting and analysis features. Ariel WebInsight provides access to current, accurate, comprehensive global regulatory data. Available on the 3E Online® platform. Ariel Research Corporation is now a part of the 3E Company.
(<http://www.3ecompany.com>)

BIOSIS Previews—scientific.thomson.com/products/bp

Provided by Thomson Scientific, BIOSIS Previews is a comprehensive reference tool for finding life sciences references worldwide. Includes abstracts and indexes on information from more than 5,500 sources around the world.

Chemical Abstracts Service (CAS)—cas.org or <http://stnweb.cas.org>

The CAS, a division of the American Chemical Society, provides scientists online and Web access to chemistry-related research data. The **CAS Registry** is the largest and most current database of chemical substance information in the world. The Registry covers substances identified from the scientific literature from 1957 to the present, with additional substances going back to the early 1900s, and it now contains records for organic and inorganic substances and sequences.

CCINFOweb—ccinfoweb.ccohs.ca

The Canadian Centre for Occupational Health and Safety's Web Information Service provides one-step searching across all of their database collections. The service requires an annual subscription. However, additional resources on the site are free including IPCS INCHEM (publications on chemicals from United Nations agencies) and CHEMINDEX (access to various chemical names for a particular substance).

CIS Bibliographic Database (COSDOC/CISILO)— ilo.org/public/english/protection/safework/cis/products/cisdoc.htm

From the International Labour Office, the CIS bibliographic database contains citations of documents that deal with occupational accidents and diseases as well as ways of preventing them. The types of documents are: laws and regulations, chemical safety data sheets, training material, articles from periodical publications, books and standards. Every record contains a detailed bibliographic description, a full abstract and indexing descriptors drawn from the CIS Thesaurus. The CISDOC database is updated on a continuous basis. Also searchable as a subfile in TOXLINE (<http://toxnet.nlm.nih.gov>).

EMBASE.com—embase.com

Provides users with content including the latest scientific developments in biomedical and pharmacological information. From Elsevier.

Dialog®—dialog.com

Content areas include government regulations, social sciences, food and agriculture, energy and environment, chemicals, pharmaceuticals, and medicine. See the Dialog Bluesheets for guides on every database in the Dialog service. Enviroline® specifically covers environmental information. (<http://library.dialog.com/bluesheets/html/bl0040.html>)

MICROMEDEX—micromedex.com

MICROMEDEX databases provide access to health care information; information on health, safety and environment in the corporate world; USP DI® updates; and P&T QUIK® reports.

ScienceDirect®—sciencedirect.com

ScienceDirect contains over 25% of the world's science, technology and medicine full text and bibliographic information with a journal collection of over 2,500 titles.

Cambridge Scientific Abstracts (CSA)—csa.com

CSA is a worldwide information company specializing in publishing and distributing—in print and electronically—bibliographic and full-text journals in the areas of natural sciences, social sciences, arts & humanities, and technology. The databases are searchable via CSA Illumina. Also offers Ulrich's Serials Analysis System.

Thomson Scientific—isinet.com

Formerly known as Thomson ISI. Their Web of Science® product provides access to current and retrospective multidisciplinary information from approximately 8,700 prestigious, high impact research journals from across the world and offers cited reference searching.

Environment Abstracts – CIS—lexisnexis.com

LexisNexis® is a leading provider of information and services solutions, including its flagship Web-based Lexis® and Nexis® research services, to a wide range of professionals in the legal, risk management, corporate, government, law enforcement, accounting and academic market.

Selected World Wide Web Resources Search Exercises

1. Environmental Protection Agency (EPA)

epa.gov

Explore the EPA's Web Site, particularly the **Databases and Software** section on the **Science and Technology** page (see link on top of page). Locate the following:

- IRIS
- ECOTOX
- Toxics Release Inventory
- Safe Drinking Water Information System

Use the Advanced Search function to find documents with titles containing *radon*.

2. Food and Drug Administration (FDA)

fda.gov

Find recall information on products manufactured by Robert's American Gourmet.

3. National Toxicology Program (NTP)

ntp-server.niehs.nih.gov/

Is *Thorium Dioxide* on the list **Known to be Human Carcinogens** in the NTP's **Report of Carcinogens**?

4. Agency for Toxic Substances and Disease Registry (ATSDR)

atsdr.cdc.gov

Find the ATSDR's **TOXFAQ** profile on *iodine*.

5. National Council for Science and the Environment (NCSE)

ncseonline.org

Find recent Congressional Research Service reports on pesticides. Look in the **Earth Portal** section.

6. Society of Toxicology (SOT)

toxicology.org

Does Oregon State University offer a doctorate program in toxicology? Look in the SOT's *Resource Guide to Careers in Toxicology*.

7. ChemFinder

chemfinder.com

Explore the variety of data sources containing information on nitrous oxide.

8. Society of Environmental Toxicology and Chemistry (SETAC)

setac.org

Where and on what dates will the SETAC Europe 21st Annual Meeting be held?

9. Scorecard (from Environmental Defense)

scorecard.org

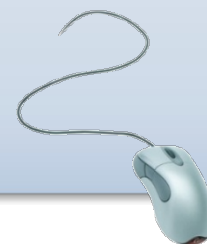
Which countries have the greatest number of high risk of lead toxics/lead hazards? Housing Units in the U.S.?

10. BIOLOG (from Syracuse Research Corporation's Environmental Fate Databases)

syrres.com/esc/efdb.htm

Use the BIOLOG file (one of Syracuse Research Corporation's Environmental Fate Data Bases –EFDB) to find references on *petroleum* in soil.

Environmental Health & Toxicology Portal Decision Tree



The National Library of Medicine **Environmental Health and Toxicology Portal** provides access to many resources. The following chart is a guide to selecting the appropriate resource or database depending on user information needs. Database and resource links can be accessed at: sis.nlm.nih.gov/enviro.html.

Use this Decision Tree to choose the correct database or resource:

FOR THE FOLLOWING TYPE OF INFORMATION:	GO TO:
Journal references to toxicology literature including developmental/reproductive and teratology (birth defects) information	TOXLINE or DART
Summary of peer-reviewed human health effects and emergency medical treatment for chemicals	HSDB
Animal Toxicity Studies	HSDB
Environmental Fate, Exposure, Standards and Regulations	HSDB
Chemical/Physical properties and safety/handling/disposal of chemicals	HSDB
Manufacturing, formulation and use of chemicals	HSDB
Chemical names and synonyms	ChemIDplus or HSDB
Chemical structures and structure searching/drawing capability	ChemIDplus
InChI and/or SMILES structure notations	ChemIDplus
List of links to NLM/NIH and other government agency information for a single chemical	ChemIDplus
Carcinogenicity, mutagenicity, tumor promotion and tumor inhibition data from the National Cancer Institute (NCI)	CCRIS
Peer-reviewed mutagenicity test data from the U.S. Environmental Protection Agency (EPA) including species, type of assay, test result and more	GENE-TOX
Hazard identification and dose-response risk assessment information from the U.S. EPA	IRIS
Cancer and noncancer oral and inhalation risk values and types from government and independent risk information groups worldwide	ITER

FOR THE FOLLOWING TYPE OF INFORMATION:	GO TO:
Results and analyses of chronic and long-term animal cancer test from NCI, the National Toxicology Program (NTP) and the general published literature	CPDB
Drug information related specifically to breastfeeding mothers and their nursing infants including maternal/infant drug levels, possible effects and more	LactMed
Environmental releases of chemicals and waste management activities reported by facilities to the U.S. EPA	TRI
Electronic maps of chemical releases, Superfund sites, health, census, income data and more	TOXMAP
Chemicals, occupations, job tasks, and associated diseases/conditions	Haz-Map
Safety and health information for products used in and around the home	Household Products Database
Material Safety Data Sheets (MSDS) and consumer product recalls	Household Products Database
Interactive website on toxic chemicals and environmental health concerns in the community	ToxTown
Bibliography on alternatives to animal testing in biomedical research	ALTBIB
Selected links to internet resources on environmental issues of special interest	Enviro-Health Links
Online tutorials on basic toxicology principles and concepts	Toxicology Tutorials
Interactive children's learning site about household chemical hazards	ToxMystery

Contacting the National Library of Medicine for Database Assistance

Toll-free: 888-FIND-NLM (346-3656)

E-mail: custserv@nlm.nih.gov

TOXNET E-mail: tehip@teh.nlm.nih.gov

Online Resources

Online Training Manuals	www.nlm.nih.gov/pubs/web_based.htm (ClinicalTrials.gov, NLM Gateway, PubMed, TOXNET)
Tutorials	www.nlm.nih.gov/bsd/disted/pubmedtutorial/ (PubMed)
Fact Sheets	www.nlm.nih.gov/pubs/factsheets/factsheets.html
Frequently Asked Questions	www.nlm.nih.gov/services/faq.html

See also Help and FAQ links on each database home page.

The National Network of Libraries of Medicine

Toll-free number for all Regional Medical Libraries: 800-338-7657

Monday-Friday 8:30 a.m. – 5:00 p.m. in all time zones

Web site: nnlm.gov

