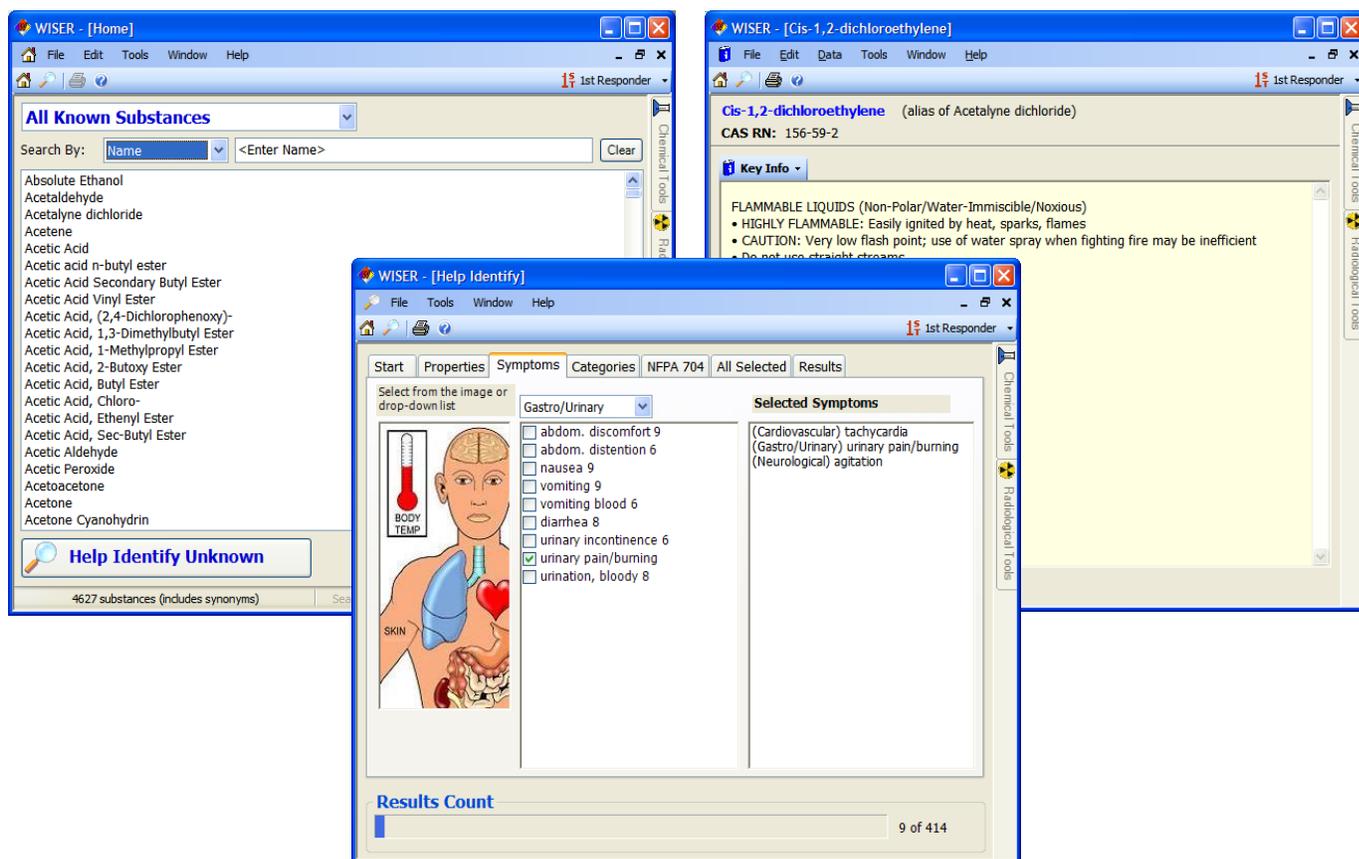


WISER User's Guide

Version 4.1



Wireless Information System
for Emergency Responders



The image displays three overlapping screenshots of the WISER software interface. The top-left window, titled 'WISER - [Home]', shows a search interface for 'All Known Substances' with a search bar and a list of chemical names. The top-right window, titled 'WISER - [Cis-1,2-dichloroethylene]', displays the 'Key Info' for this substance, including its CAS RN (156-59-2) and hazard information such as 'FLAMMABLE LIQUIDS' and 'HIGHLY FLAMMABLE'. The bottom window, titled 'WISER - [Help Identify]', shows a 'Symptoms' tab with a human diagram and a list of symptoms for 'Gastro/Urinary' issues, including 'abdom. discomfort 9', 'nausea 9', and 'urinary pain/burning'. A 'Results Count' bar at the bottom indicates '9 of 414' results.

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Table of Contents

1. Introduction	3
1.1. Features.....	3
1.2. System Requirements	3
1.3. Installing WISER.....	4
1.4. Disclaimer	4
1.5. Software Used by WISER.....	4
2. Using WISER	5
2.1. Overview.....	5
2.1.1. Setting the User Profile	6
2.1.2. File Menu	7
2.1.3. Edit Menu	7
2.1.4. Window Menu	7
2.1.5. Help Menu.....	8
2.1.6. Navigation	9
2.1.7. Printing.....	11
2.1.8. Closing WISER	11
2.1.9. Checking for Updates	11
2.2. Main Window – Known Substance List	11
2.2.1. Searching by Name or Identifier	12
2.2.1.1. Search by Name.....	15
2.2.1.2. Search by Identifier.....	15
2.2.2. Filtering by Substance Type	16
2.2.3. Filtering by Substance Categories	17
2.3. Data Window	19
2.3.1. On-line Substance Lookup.....	24
2.3.2. Viewing Multiple Substances at Once.....	24
2.4. Help Identify	27
2.4.1. Start Tab	28
2.4.2. Properties Tab.....	28
2.4.3. Symptoms Tab	33
2.4.4. Categories Tab.....	37
2.4.5. NFPA 704 Tab	39
2.4.6. All Selected Tab	40
2.4.7. Results Tab.....	40
2.4.8. Search Preferences	46
2.4.9. Previous Searches Dialog.....	47
2.5. Tools	48
2.5.1. General Tools / Utilities.....	51
2.5.2. Algorithms	53
2.5.3. Reference Materials.....	56
2.6. Event Tracking.....	57
3. Tutorial.....	58
3.1. Known Substance.....	58
3.2. Unknown Chemical Substance.....	60
4. About NLM.....	64

1. Introduction

The Wireless Information System for Emergency Responders (WISER) is a system concept for providing First Responders at the scene of hazardous material incidents – chemical, biological, or radioactive – with integrated information, decision support, and communications. WISER provides critical chemical information quickly and conveniently on mobile devices, such as PDAs, Windows Desktop computers, tablet computers, field laptops, mobile phones, and mobile data terminals. It aids in the identification of unknown chemicals and, once the chemical is identified, provides guidance on immediate actions necessary to save lives and protect the environment. Substance information and identification properties come from the Hazardous Substances Data Bank (HSDB), developed and maintained by the National Library of Medicine.

WISER currently exists as a standalone PDA application for Pocket PC or Palm OS devices and as a Windows Desktop application; this document describes the Windows Desktop version. WISER contains HSDB information and decision support logic for 400+ substances (future versions will provide access to more substances). The substances were chosen based on First Responder inputs, degree of chemical hazard, and historical frequency of incidents. The WISER application assists First Responders in rapidly determining the substance involved and gives the First Responder critical information regarding the substance, allowing them to take the necessary immediate actions to minimize the effects of the hazmat incident.

1.1. Features

- Access to data from the Hazardous Substance Data Bank, covering basic, physical, hazardous material, medical, and environmental areas
- Multiple substances, chosen based on First Responder inputs, degree of chemical hazard, and historical frequency of incidents
- Substance identification support, based on physical properties, patient symptoms, NFPA 704 hazard values, and substance categories
- General tools and reference materials for on-scene support, e.g., the complete Emergency Response Guidebook, and the WMD Response Guidebook
- Biological substance list and substance data
- Radiologicals
 - Radioisotope substance list and substance data
 - Tools and reference documentation for on-scene support of radiological events

1.2. System Requirements

For system requirements, please see the README that is included in the WISER installation, or in the download section of the [WISER website](#).

1.3. Installing WISER

For instructions on installing and uninstalling WISER, please see the README that is included in the WISER installation, or in the download section of the [WISER website](#).

1.4. Disclaimer

The U.S. Government does not warrant or assume any legal liability or responsibility for the accuracy, completeness, or usefulness of any information, apparatus, product, or process disclosed.

It is not the intention of NLM to provide specific medical advice to the public, but rather to provide users with information to better understand their health.

NLM does not endorse or recommend any commercial products, process, or services.

1.5. Software Used by WISER

The WISER application makes use of third-party software. License information for this software is available in the file DisclaimerAndLicenses.txt that is included with the WISER distribution. This third-party software consists of:

- SharpZipLib - produced by Mike Krueger. See <http://www.icsharpcode.net/OpenSource/SharpZipLib/Default.aspx>. SharpZipLib is used to compress and uncompress data in the WISER database.

2. Using WISER

The WISER application is run from the WISER Desktop Shortcut or the Start→Programs menu.

1. Double-click on the WISER Desktop Shortcut.
or
1. Select Start→Programs→WISER→Windows
2. Double-click on the WISER application icon.

During startup of the application the following “splash screen” will be displayed for several seconds while the application loads.



LOADING WISER

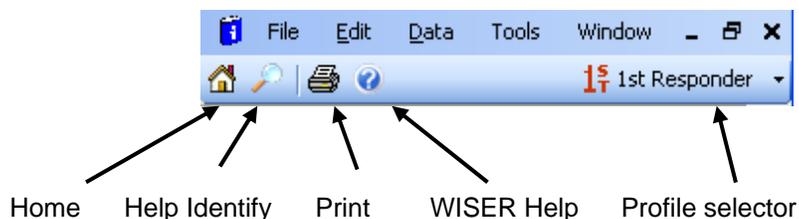
The remainder of this section details the functionality on each of the windows that comprise the WISER application.

2.1. Overview

WISER consist of the following primary windows:

- Known Substance Window – contains the substance list
- Data Window – displays substance data for a selected substance
- Help Identify Window – for identification of unknown chemicals

Each of these windows has in common a menu and toolbar at the top of the window for selecting the user profile and other various options which will be discussed later in this document.



WISER also provides a set of tools and reference materials, not related to a specific WISER substance. These are accessed via the “Chemical Tools”, “Biological Tools”, and “Radiological Tools” tabs on the right edge of the window. To display the available options, mouse-over or click on the desired tab.



2.1.1. Setting the User Profile

The User Profile determines how certain information is presented by WISER, tailoring the application to suit the needs of the type of user. Specifically, it controls what ‘hot links’ are presented on the [Data Window's](#) data menu, ensuring that the most relevant information is the most readily available.

To set the User Profile, click the toolbar’s profile button or dropdown arrow. When this is done, a context menu opens presenting the available profiles, as shown at right.

The current profile selection is indicated with a checkmark in the menu, and by a corresponding icon on the toolbar button. The icons for each of the profile options are as follows:



-  1st Responder, e.g., first engine on the scene
-  Hazmat Specialist
-  Emergency Medical Specialist (EMS)

Each time WISER is started the User Profile setting from its previous use is restored.

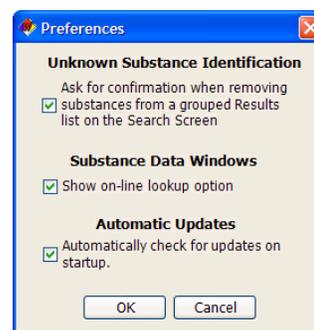
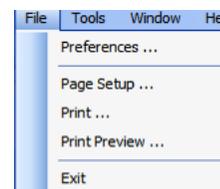
2.1.2. File Menu

The File menu provides the ability to exit the WISER application, print, and display the user Preferences dialog.

The Preferences dialog, shown below, provides user preference settings that will be retained across invocations of the WISER application.

The available preferences are as follows:

- Confirmation of substance removals from search results: see the [Search Preferences](#) section for details.
- On-line lookup option on the Data Window: see the [On-line Substance Lookup](#) section for details.
- Automatic Updates: selecting this option will cause WISER to automatically check the WISER web site for a new version each time it is started. If Internet connectivity or a new version is not available, this will be transparent to the user. Otherwise, a dialog is presented giving you the option of being taken to the WISER web site to download the new version. For additional details, please see the README file that is installed with WISER.



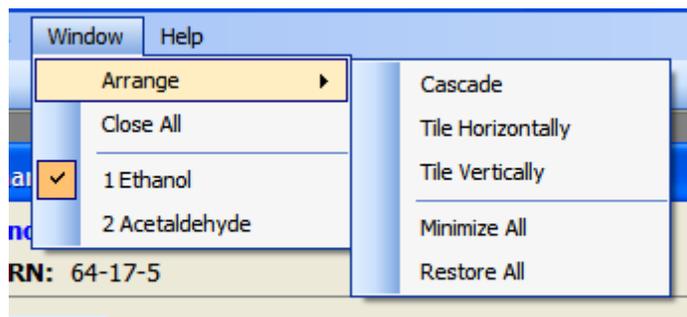
The Edit menu provides the ability to handle standard text editing capabilities such as Undo, Cut, Copy, Paste, Delete, and Select All. These features are only available on certain areas of the application and will be disabled in areas that are not capable of supporting these functions.

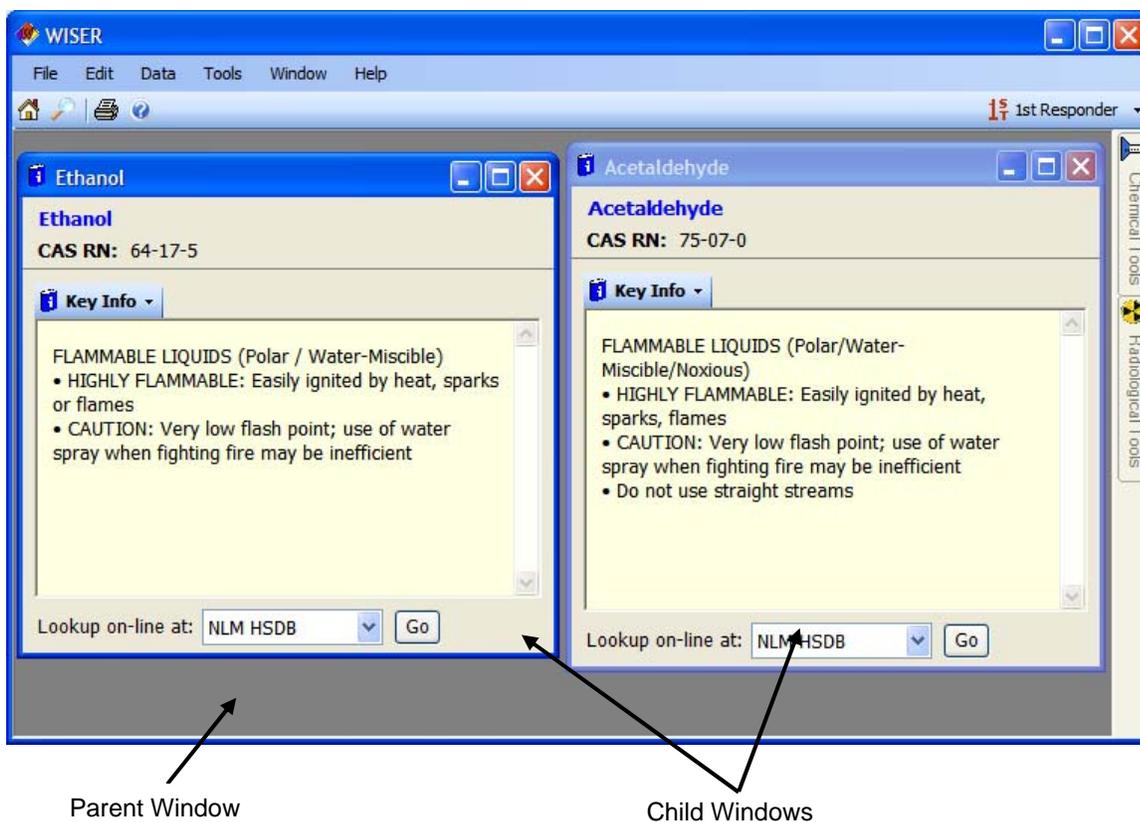
2.1.3. Edit Menu

The Edit menu provides the ability to handle standard text editing capabilities such as Undo, Cut, Copy, Paste, Delete, and Select All. These features are only available on certain areas of the application and will be disabled in areas that are not capable of supporting these functions.

2.1.4. Window Menu

The "Window" menu item is used to control the various windows in the WISER application. The WISER application is a MDI (Multi-Document Interface) application, which means that all of the primary windows are actually child windows inside a main parent window as shown in the second image.





The “Arrange” menu has several options for organizing all of the child windows within the parent window. This includes the ability to minimize all child windows, restore the child windows back to their previous positions, arrange the windows in a horizontal or vertical layout and cascade each window. The “Close All” menu allows for the closing of all child windows within the parent. Below the “Close All” menu option is a listing of all available child windows with the active child window containing a check mark next to it. Selecting any of these menu options will activate or give focus to that child window within the parent.

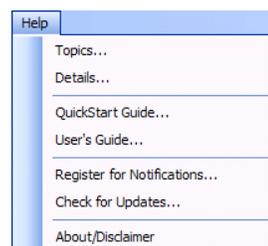
2.1.5. Help Menu

As shown at right, help content is accessible via the “Help” menu option.

There are two types of help content available at any given time, **Topics** and **Details**. The Topics option launches the help starting at the beginning of the help content (table of contents). The **Help Details** option is context sensitive, launching help at the content that describes the active window.

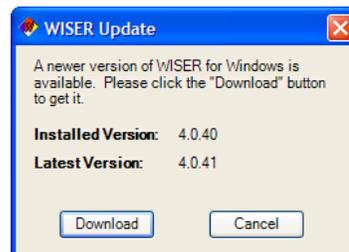
The QuickStart Guide and User’s Guide options open the external documentation that is packaged with the WISER installation. [Adobe Reader](#) or equivalent PDF-viewing software is required to view these documents.

The next two options, **Register for Notifications** and **Check for Updates**, require Internet connectivity. The **Register for Notifications** option opens a web browser and takes you to the WISER web site, displaying the page where you can join the WISER e-mail list. This list is used to periodically send out



notifications related to WISER, such as the availability of new versions. If you did not register when you downloaded WISER, or did not receive WISER via a download from the web site, then it is strongly encouraged that you do so to ensure you are kept up to date with the latest WISER news. E-mails from this list will be very infrequent, and your e-mail address will never be used for any other purpose.

The **Check for Updates** option checks the WISER web site to see if there is a new version of WISER. If not, a dialog displays indicating "No updates are available." If a newer version is available, a dialog displays similar to that shown on the right. Pressing the **Download** button opens a web browser and takes you to the WISER web site, displaying the page from which you can download the new version. For additional details, see the README file that is installed with WISER.



Finally, the **About WISER** dialog, shown below, is accessible from this menu option. This dialog includes database and application version information along with the WISER disclaimer text.



2.1.6. Navigation

Access to the Main Window, is available via the Home button  on the toolbar. Selecting this returns to the Main Window at any point within the application.

Navigation between the three primary windows is as follows:

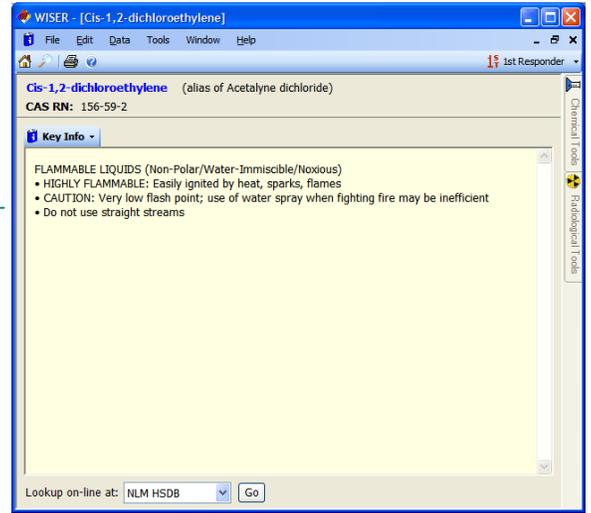
Main Window

Data Window



Substance Selection

Home button



Help Identify button

Home button

Results list substance selection

Help Identify Button

Search Window



2.1.7. Printing

A print option is available on the [Data Window](#), the [Help Identify Window](#) and other printable windows via the toolbar or the File menu. When printing from the Data Window, a dialog is presented that allows printing of either the currently displayed data or a custom selection of any or all of the data for the substance being viewed. When printing from a Help Identify Window a summary of the current search, consisting of each of the selected properties, symptoms, NFPA 704 hazard values, substance categories, and the results list is printed.

2.1.8. Closing WISER

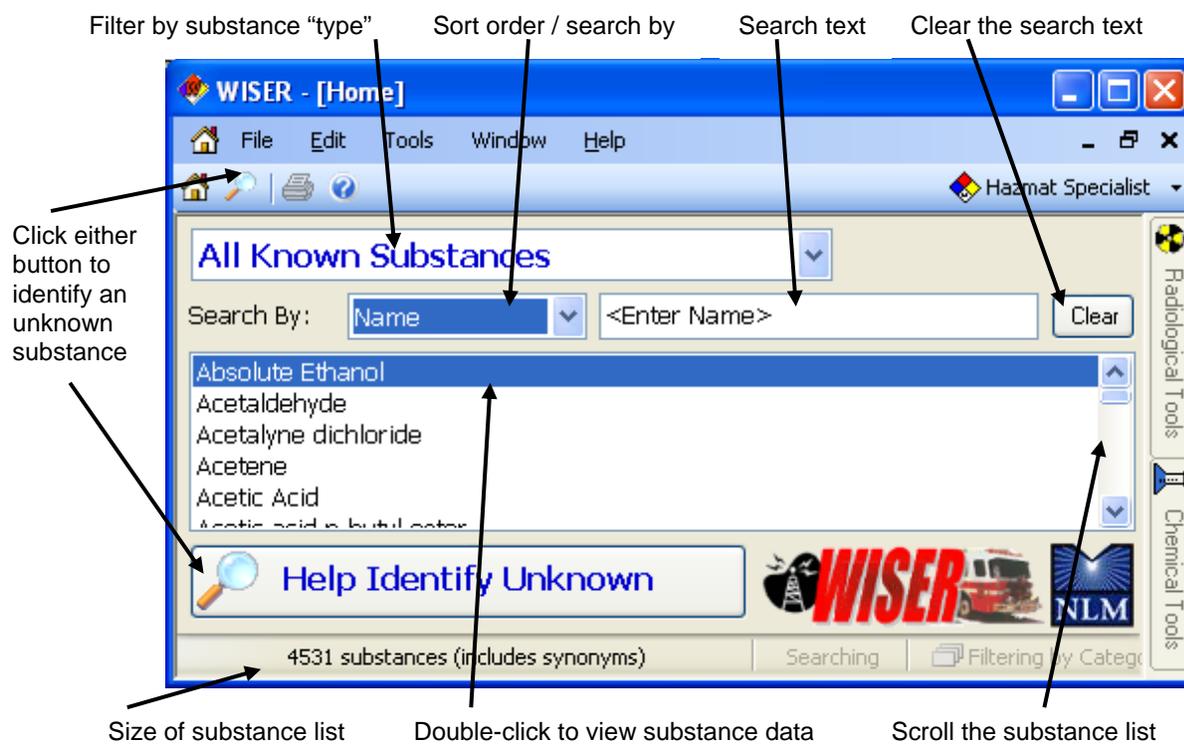
To close the WISER application, click the  button of the parent window or select the File→Exit menu option from the main menu.

2.1.9. Checking for Updates

To close the WISER application, click the  button of the parent window or select the File→Exit menu option from the main menu.

2.2. Main Window – Known Substance List

The main window is presented upon startup of WISER or any time the home button is selected on the toolbar. The primary purpose of this window is to locate a substance by its name or one of its identification numbers, and then navigate to the substance data window to view the data specific to that substance. If trying to identify an unknown chemical, then this window provides a **Help Identify Unknown** button, as shown below, that advances to the [Help Identify Window](#) where functionality is available for identifying the chemical.



If you know what the substance is, then you can locate it in the list using the following features:

- Browsing through the list of substances using the scrollbar
- Ordering the list by substance name or one of the substance identification numbers, where the possibilities are UN/NA number, CAS registry number, and STCC number
- Performing a search by entering the name or one of the identifiers into the search text box
- Filtering based on the “type” of substance (all substances, all chemicals, all biologicals, all radiologicals)
- Additional filtering based on selected substance categories (type selection = “Substances, Filter by Category”)

Upon locating the desired substance in the substance list, double-clicking it displays the [Data Window](#) for that substance.

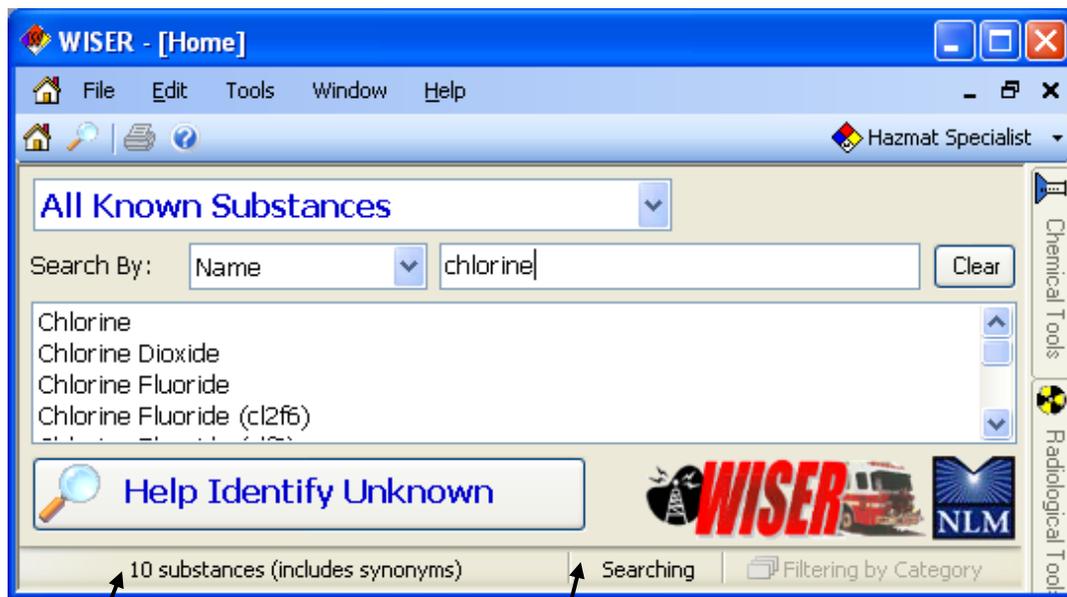
2.2.1. Searching by Name or Identifier

To search for a substance name or identifier, use the **Search by** pull-down to order the list and indicate the text that will be entered in the text field. The options are as follows:

- Name: list is ordered alphabetically by name
- UN/NA: list is ordered by UN/NA number
- CAS RN: list is ordered by CAS registry number
- STCC: list is ordered by STCC number



The text field to the right of this selection will then prompt for the search text. Click in the text field and begin typing. As characters are entered, the content of the list changes to display only those substances that match the search text. The status display along the bottom of the window indicates the number of substances in the updated list, and the fact that the list is reflecting the results of a search.



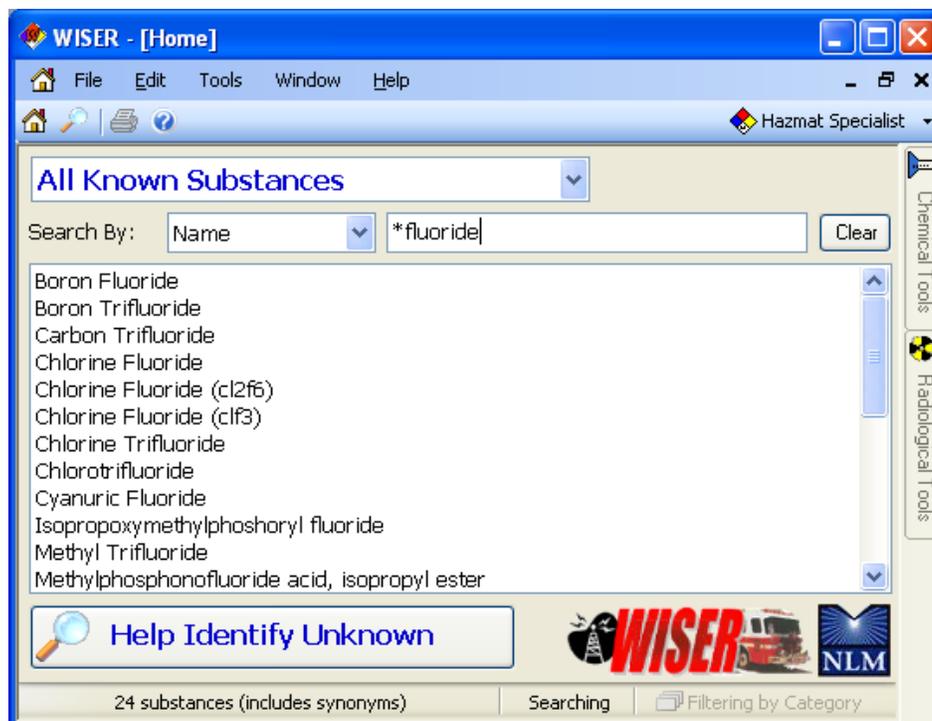
Number of substances in search results

Indicates list contains results of a search

A "*" character can be entered in the search text as a wildcard character. A wildcard character at the end of the search text is always implied. For example,

- Entering "chlorine" as the search text is the same as entering "chlorine*", and results in a list of substances whose name starts with "chlorine"

- Entering “*fluoride” as the search text results in a list of substances whose name contains “fluoride”



2.2.1.1. Search by Name

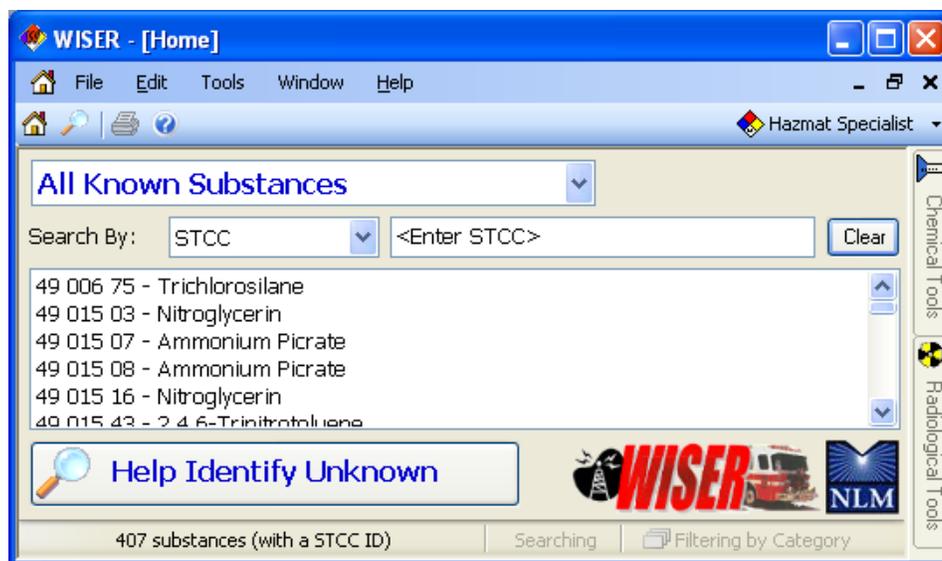
When **Name** is selected from the **Search By** menu, the substance list is alphabetically sorted, and is augmented with synonyms, i.e. other names by which the substances in WISER are known.

Note that numbers and punctuation that prefix a name are ignored for sorting and search purposes, and leading numbers and punctuation in the search text field are ignored as well.

2.2.1.2. Search by Identifier

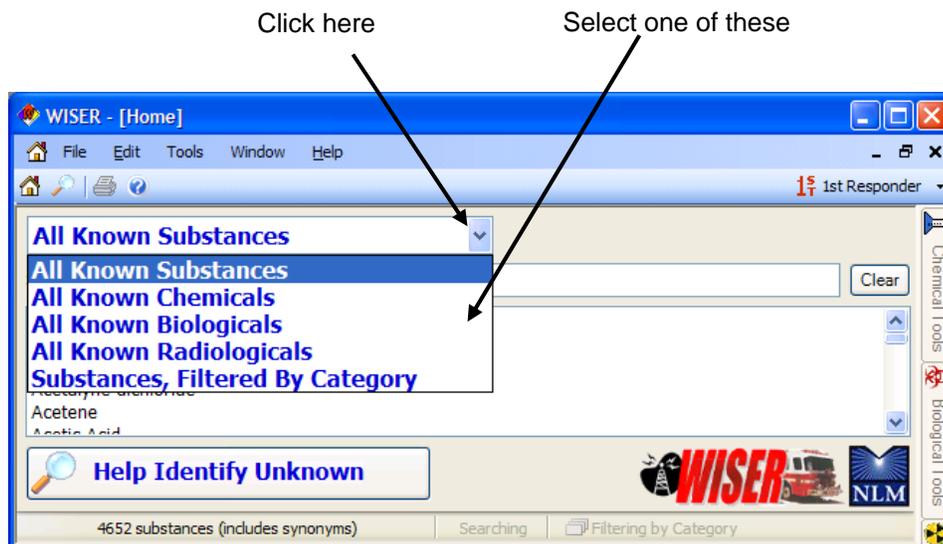
As shown in the following figure, when **UN/NA**, **CAS RN**, or **STCC** is selected from the **Search By** menu, the substance list contains only the core HSDB substance names (no synonyms), is order by the selected identification number, and each substance name is prefixed with the identification number. A particular substance will occur in the list for each unique identifier that it has; for example, a substance may have multiple UN/NA numbers, and thus will occur in the list once for each of those numbers in the UN/NA-sorted list.

In the case of STCC numbers, whose format contains embedded spaces, those spaces need not be entered in the search text.



2.2.2. Filtering by Substance Type

By default, the substance list includes all substance in WISER. The list can be filtered to include only a particular type of substance, e.g., chemicals, biologicals, or radiologicals.



This is an example of filtering by substance categories, and the status bar indicating this:

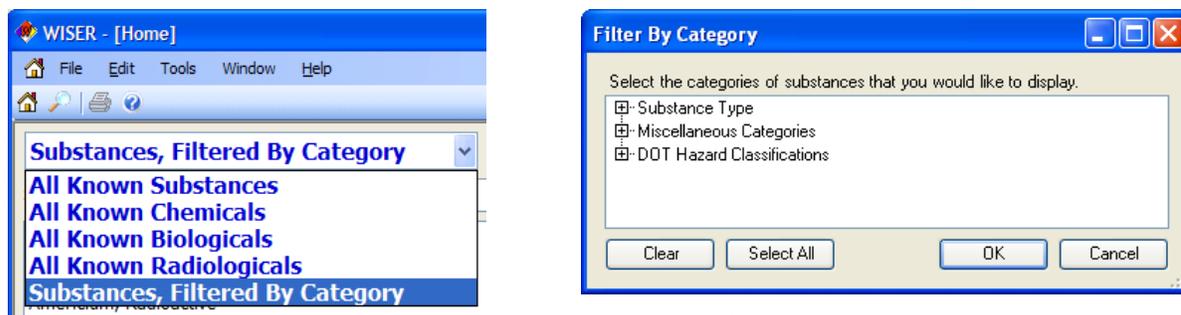


Indicates a filtered list is displayed

When the list is filtered in this fashion, any subsequent searches will occur only against the filtered list.

2.2.3. Filtering by Substance Categories

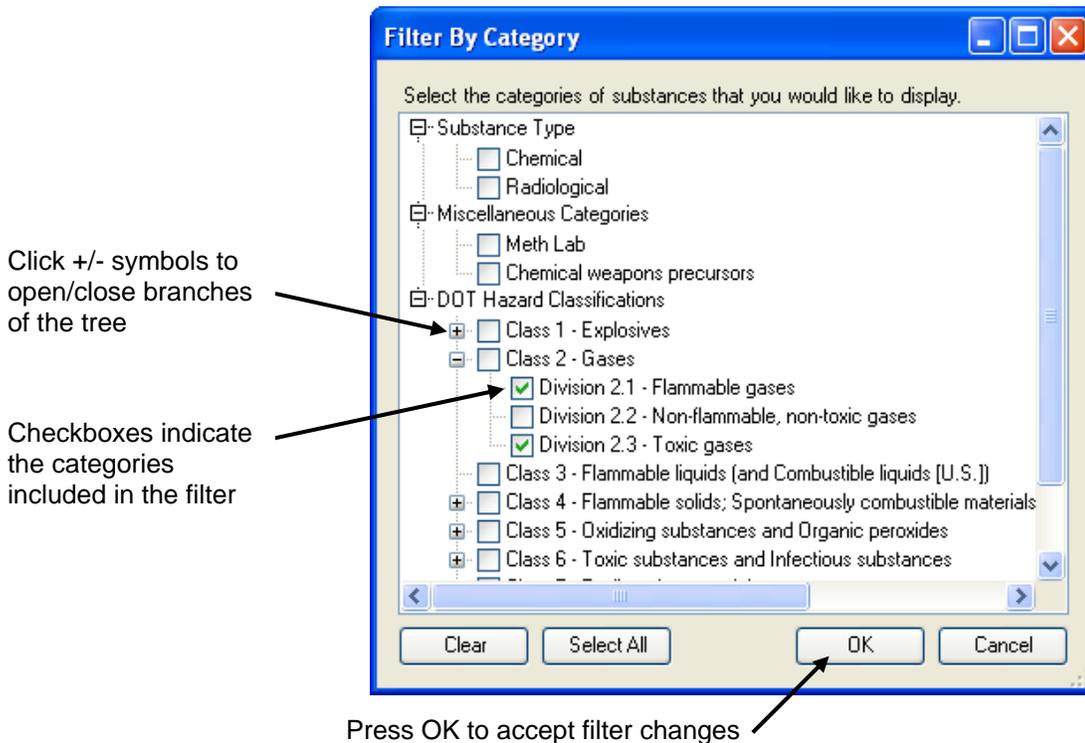
In the previous section, the list was filtered by selecting a predetermined filter, e.g., chemical vs. biological vs. radiological. A custom filter can instead be applied that allows filtering by additional substance categories. To display this type of substance list, select the “Substances, Filter By Category” option from the drop-down list, as shown, below, and a “Filter By Category” dialog window will appear.



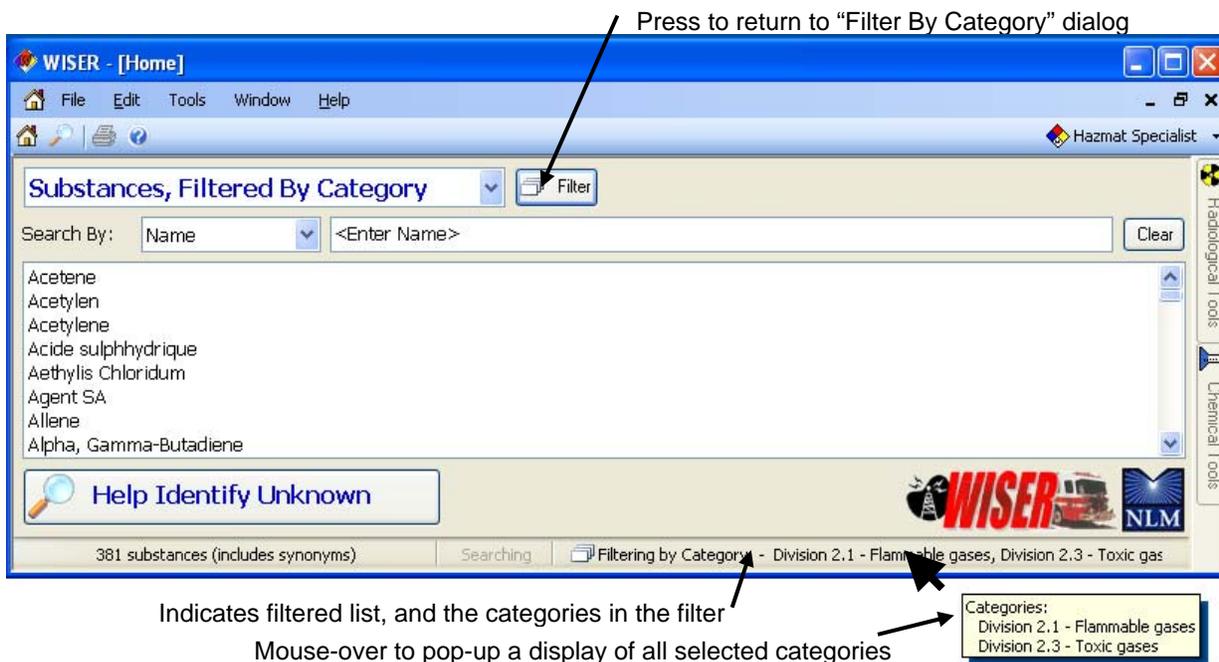
Select this option

Category selection dialog automatically appears

Use the Filter By Category dialog to explore the available substance categories as a tree, and to indicate which ones to include in the filter by selecting the checkboxes next to the category names.



When complete, select OK, and the substance list will update to include only those substances that are a member of any one of the categories that were selected.

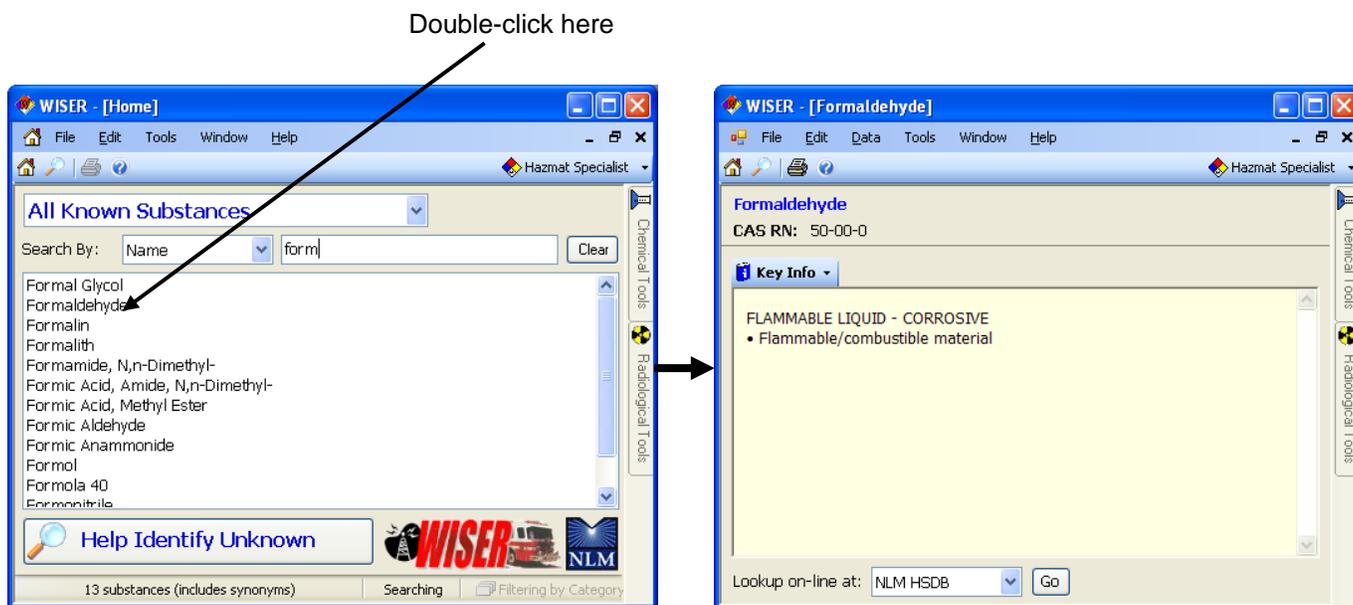


As shown above, when displaying a filtered list, a “Filter” button is available to return to the “Filter By Category” dialog, where the selected categories can be reviewed and changed. In addition, the status bar indicates the list is filtered-by-category, displays the selected categories, and can be clicked on to return to the “Filter By Category” dialog. This status area may not be large enough to display the selections, but if the mouse pointer is moved overtop of it, a pop-up will appear that lists the selections.

When the list is filtered in this fashion, any subsequent searches will occur only against the filtered list. If the substance list type is changed, e.g., back to “All Known Substances”, and then changed back to the filtered list, the last entered filter will be retained.

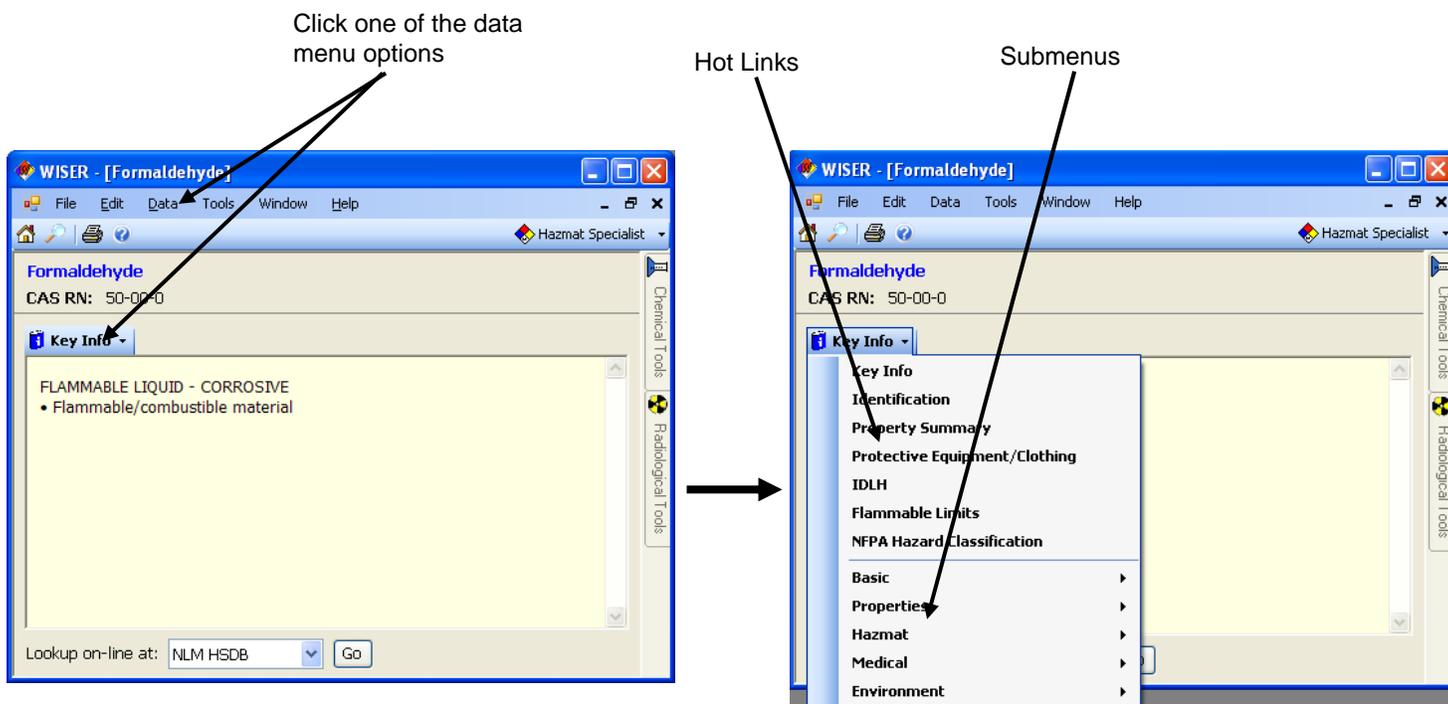
2.3. Data Window

The Data Window is presented upon double-clicking a substance name from the [Main Window's](#) Known Substance List or from the [Help Identify results list](#). It is used to select and view all data that is available for the substance. To return to the Main Window, select the Home button on the toolbar, or close the Data Window by pressing its close button (the ‘X’ in its top right corner).



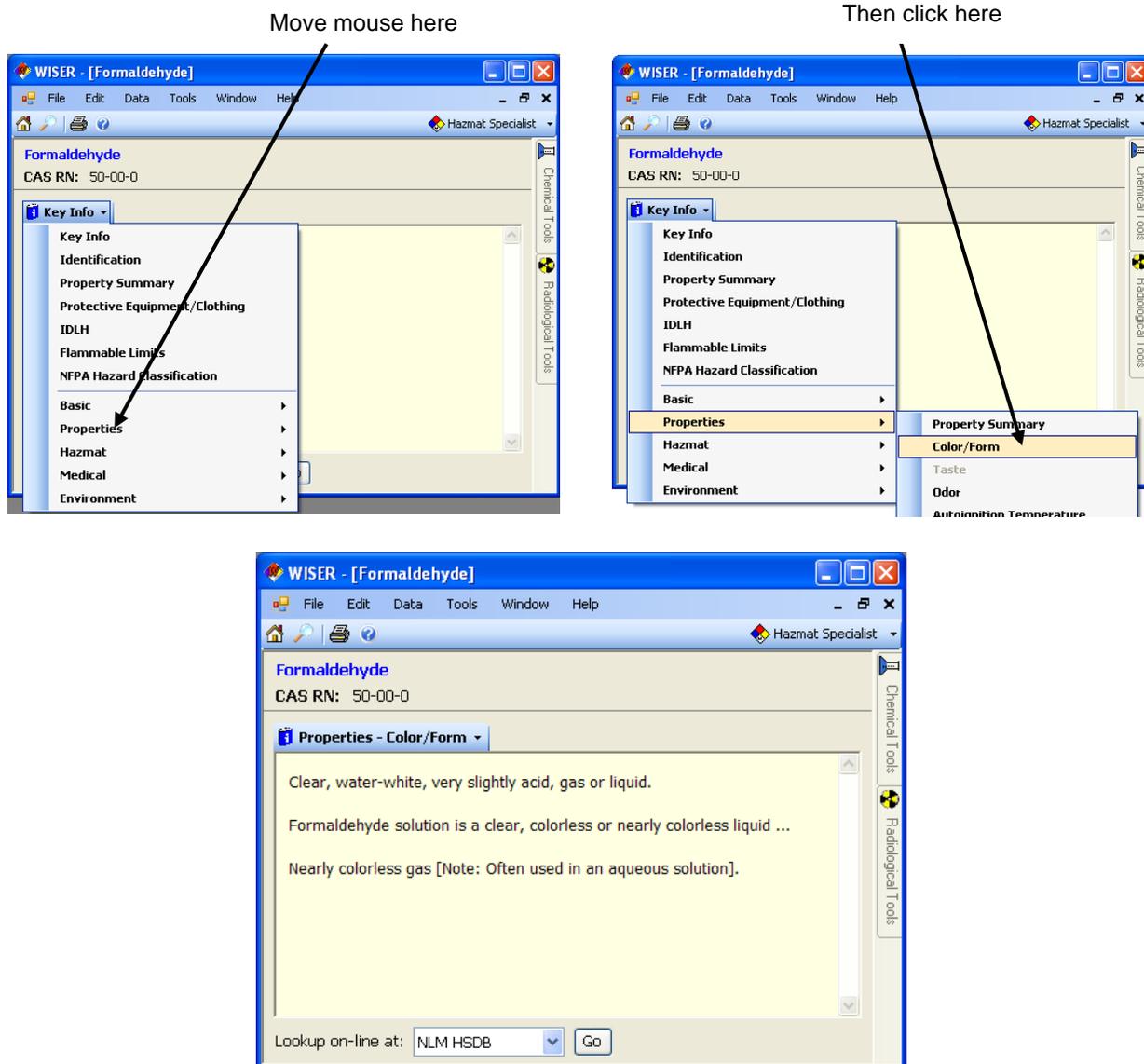
As shown in the above figure, the top of the Data Window indicates the name of the substance and its CAS registry number. If an alias of the substance was selected from the Main Window, the alias is indicated next to the substance name. If the Main window was sorted by UN/NA or STCC numbers, then those ID numbers will be included next to the CAS. In the above example, “Formic Aldehyde,” an alias of the substance known in the HSDB as Formaldehyde, was chosen from the Main Window’s substance list.

The Data Window initially displays Key Info, a summary of the most immediate, critical aspects of a substance. To see additional data, select the tab that displays the title of the data (“Key Info”), or select the Data menu in the top menu bar of the main window. These options present a menu of ‘hot links’ and submenus representing the different types of data available for the substance.



The hot links are generally duplicates of items found within the submenus, but provide a quicker way to get to the most relevant information for the user profile. What hot links are available depend on the [user profile](#) and the type of substance (chemical, biological, or radioisotope).

The bottom portion of the Data menu contains submenu options, where each submenu represents a category of options. Selecting one of these pops up the submenu, listing the data elements in that category. Again, the available options depend on the substance type. Selecting a submenu item replaces the previous data display contents with the selected data element and a heading bar above the data displays the menu and submenu selections.



The hot links that are available on the data menu for a chemical are as follows. Each is a duplicate of one of the submenu options, except for those “custom” options that are noted.

- Common to all user profiles:
 - Key Info – this custom option present the most immediate dangers or considerations for an encounter with the substance
 - Identification – this custom option provides a summary of identification numbers, and a list of the “search value mappings” that will identify the substance when using the Help Identify Unknown feature, i.e., the properties, symptoms, NFPA 704 hazard values, and substance categories that apply to the substance
- 1st Responder profile

- PPE (Personal Protective Equipment & Clothing) – also available from the Hazmat submenu
- Protective Distance – this custom option reflects the Public Safety section of the DOT Emergency Response Guidebook – also available from the Hazmat submenu
- Fire Fighting Procedures – also available from the Hazmat submenu
- Reactivities & Incompatibilities – also available from the Hazmat submenu
- Treatment Overview – also available from the Medical submenu
- Hazmat Specialist profile
 - Property Summary – this custom option provides a collection of select properties that are available separately under the Properties submenu – also available from the Properties submenu
 - PPE (Personal Protective Equipment & Clothing) – also available from the Hazmat submenu
 - IDLH (Immediately Dangerous to Life or Health) – also available from the Medical submenu
 - Flammable Limits – also available from the Hazmat submenu
 - NFPA Hazard Classification – also available from the Hazmat submenu
- EMS profile
 - Treatment Overview – also available from the Medical submenu
 - Health Effects – also available from the Medical submenu
 - Toxicity Summary – also available from the Medical submenu
 - IDLH (Immediately Dangerous to Life or Health) – also available from the Medical submenu
 - NFPA Hazard Classification – also available from the Hazmat submenu

The data elements available from the submenus of the data menu when viewing a chemical are shown below. When viewing data for radioisotopes, a subset of these are available. All data elements will not necessarily be available for all substances.

Basic Information

- Shipping Name/Number (UN/NA/IMO identification numbers)
- CAS Registry Number
- STCC Number
- Synonyms
- Substance Categories
- Molecular Formula
- Shipment Methods & Regulations
- EPA Hazardous Waste Number
- Major Uses
- Storage Conditions

Properties

- Property Summary
- Color and Form
- Taste
- Odor
- Autoignition Temperature
- Boiling Point
- Density/Specific Gravity
- Decomposition
- Flash Point
- Ionization Potential
- Molecular Formula
- Melting Point

- Molecular Weight
- Odor Threshold
- pH
- Polymerization
- Solubilities
- Stability/Shelf Life
- Vapor Density
- Vapor Pressure
- Viscosity
- Other Properties

Hazmat Information

- DOT Emergency Guidelines
- Protective Distance
- WMD Response Guidelines
- NFPA Hazard Classification
- Fire Potential
- Fire Fighting Procedures
- Hazards Summary
- PPE (Personal Protective Equipment & Clothing)
- Flammable Limits
- Toxic Combustion Products
- Explosive Limits & Potential
- Reactivities & Incompatibilities
- Other Firefighting Hazards
- Other Hazardous Reactions
- Cleanup Methods
- Disposal Methods

Medical Information

- Treatment Overview
- Health Effects
- AEGL (Acute Exposure Guideline Levels)
- IDLH (Immediately Dangerous to Life or Health)
- Threshold Limit Values
- NIOSH Recommended Exposure Levels
- OSHA Standards
- Skin, Eye and Respiratory Irritations
- Other Preventive Measures
- Toxicity Summary
- Range of Toxicity
- Laboratory
- Evidence for Carcinogenicity
- Radiation Limits & Potential

Environmental Information

- Exposure Summary
- Environmental Fate
- CERCLA Reportable Quantities
- Non-Human Toxicity Values
- Ecotoxicity Values
- Soil Adsorption/Mobility
- Volatilization from Water/Soil

The data elements available when viewing a biological substance are shown below.

Basic Information

- Shipping Name/Number (UN/NA/IMO identification numbers)
- Synonyms
- Substance Categories

Properties

- Characteristics
- Type of Harm

Hazmat Information

- DOT Emergency Guidelines
- WMD Response Guidelines
- Protective Distance
- PPE (Personal Protective Equipment & Clothing)
- Emergency Response

Medical Information

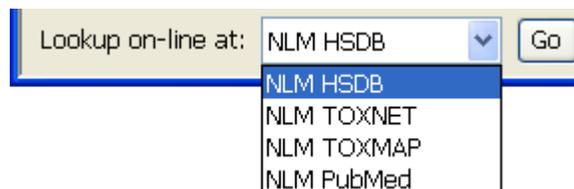
- Signs and Symptoms
- Indicators
- Clinical Features
- Treatment Overview
- Routes of Exposure
- Transmission
- Diagnosis
- Prophylaxis

Environmental Information

- Occurrence
- Reservoirs
- Isolation and Decontamination
- History
- Delivery

2.3.1. On-line Substance Lookup

At the bottom of the Data Window is a feature that permits an on-line lookup of the current substance. Whereas WISER is primarily intended to provide information relevant to the first responder community, this lookup feature provides a convenient means by which complete and comprehensive information on the substance can be accessed.



To use this feature, select one of the lookup locations from the drop-down list, and then press the **Go** button. Your default Internet browser will open outside of WISER and show the results of the search for the current substance at the selected location.

The lookup locations currently available include:

- **NLM HSDB:** the Hazardous Substances Data Bank is the scientifically peer-reviewed database at the National Library of Medicine that serves as the primary data source for WISER. This option allows the complete HSDB content of a substance to be viewed, as opposed to the subset that is contained within WISER. HSDB provides broad scope in human and animal toxicity, safety and handling, environmental fate, and more. It is one member of the cluster of NLM TOXNET databases (see below).
- **NLM TOXNET:** this option searches for the current substance across a cluster of databases on toxicology, hazardous chemicals, and related areas. For more details, see <http://toxnet.nlm.nih.gov/index.html>.
- **NLM TOXMAP:** this option searches for the current substance in the Division of Specialized Information Services of the National Library of Medicines Geographic Information System. This system helps users visually explore data from the U.S. Environmental Protection Agency (EPA)'s Toxics Release Inventory and Superfund Program. For more details, see <http://toxmap.nlm.nih.gov/toxmap/main/index.jsp>.
- **NLM PubMed:** this option searches for the current substance at PubMed, a service of the National Library of Medicine that includes over 15 million citations from MEDLINE and other life science journals for biomedical articles back to the 1950s. PubMed includes links to full text articles and other related resources. For more details, see <http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?>

A preference is available to turn off the on-line lookup feature. This might be desirable, for example, if the standard operating mode is in a disconnected environment. The preference, shown at the right, is accessed by selecting **Preferences...** from the **File** menu.

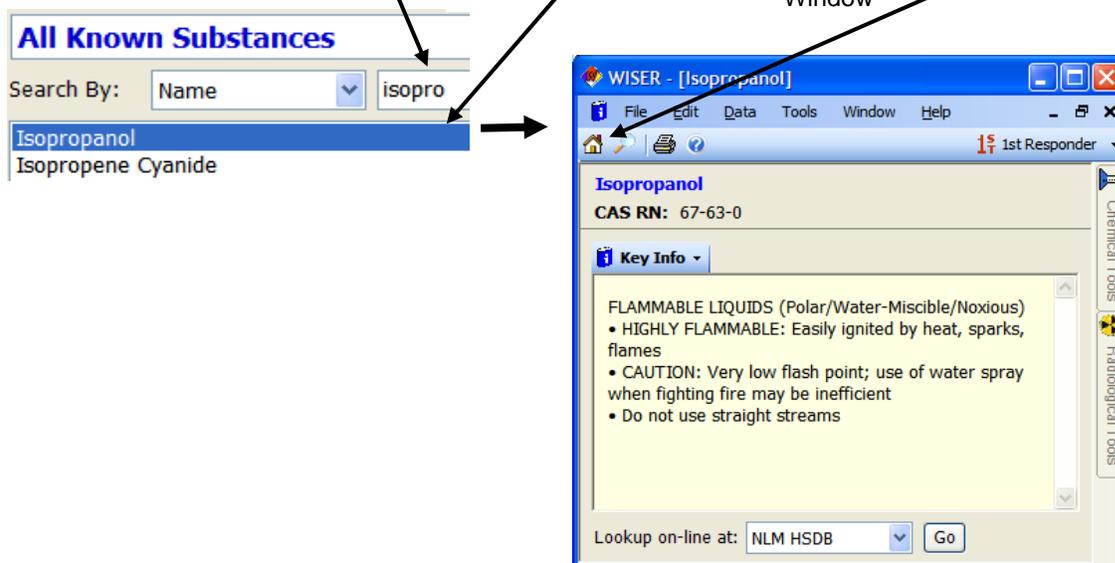


2.3.2. Viewing Multiple Substances at Once

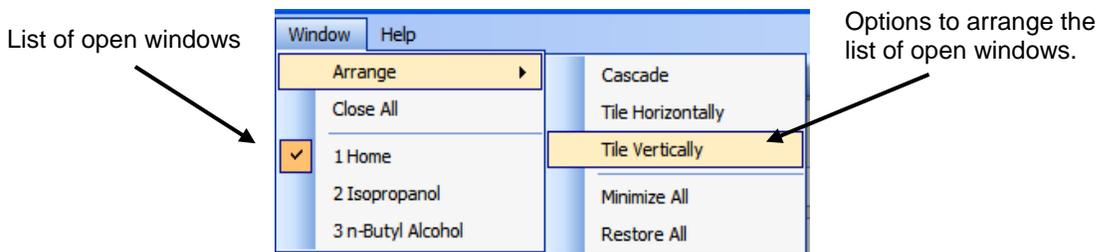
Because the WISER application is an [MDI application](#), it is possible to view data on multiple substances concurrently. For example, suppose you would like to view the data on Isopropanol and n-Butyl Alcohol side by side. This can be accomplished by opening the Data Window for Isopropanol and then n-Butyl Alcohol and tiling the windows in a horizontal or vertical manner. The following outlines the steps necessary to display the data for Isopropanol and n-Butyl Alcohol at the same time.

Using the WISER application, begin to type in the text field the name of the substance you are interested in. Once the substance is available in the list, double-click on it to display its Data Window and return back to the Main Window.

1. Enter the name of the substance on the main window
2. Double-click to launch the Data Window.
3. Click on the Home button to return to the Main Window

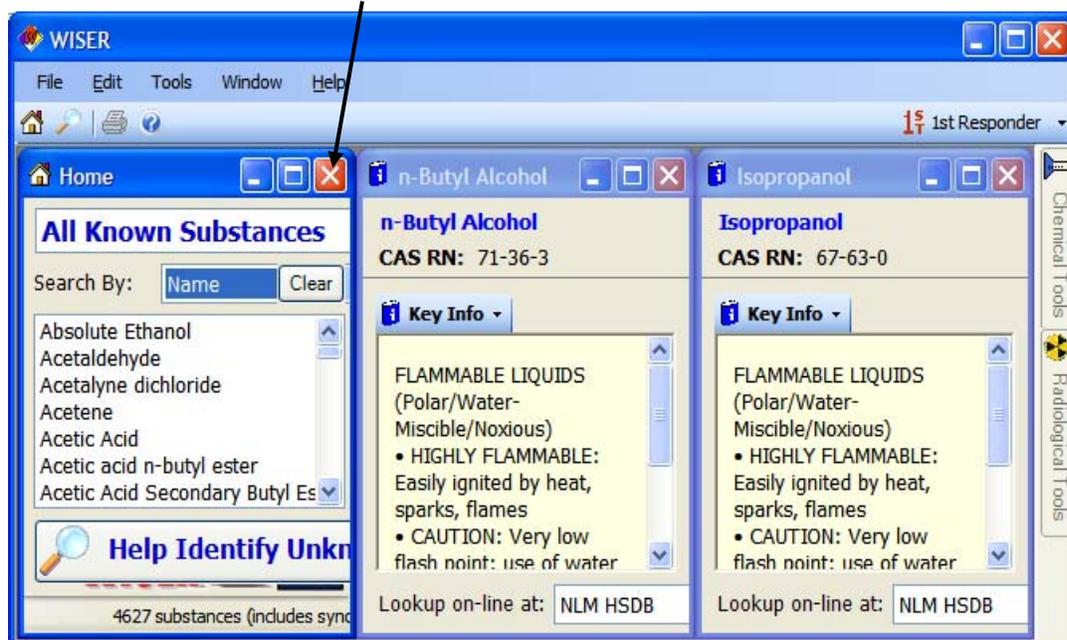


Perform the same steps above, but this time for the n-Butyl Alcohol substance. Once this is done, you will need to tile the Data Windows so you can view both substances at the same time. Clicking on the "Window" menu item will give you a list of all of the Windows that have been opened including the home or Main Window as seen here:



From here we can see that there are three open windows: the Home (Main window) and the two Data windows that were just opened. To arrange the Windows side-by-side click on the "Arrange" menu item and select either "Tile Vertically" or "Tile Horizontally" to arrange the three windows. As seen in the following figure, all three windows have been arranged vertically.

For more space you can close the Home window by clicking the X and re-arranging the Data windows via the "Window" menu item.



The following figure shows the same two Data Windows after the Main Window has been closed and the remaining two Data Windows have been re-tiled vertically.



2.4. Help Identify

Note: *This feature only supports identification of chemicals. The substances in WISER's radioisotope and biological substance lists are excluded.*

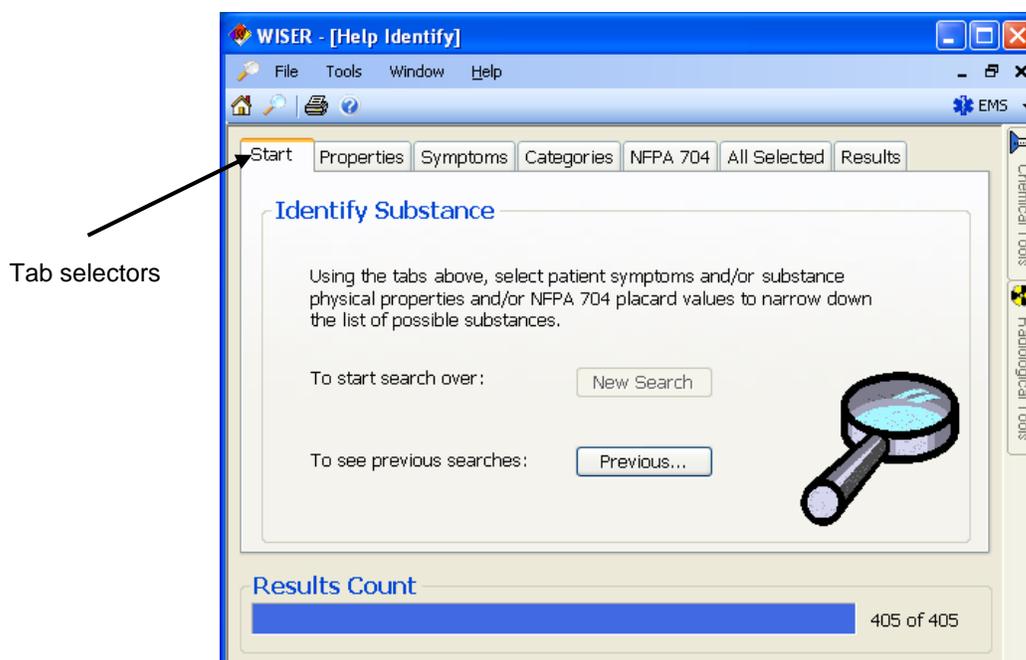
Note: *The sections that follow contain references to substance counts which may change as updated versions of the WISER database are released. This would be caused by the addition of new substances or updates to the search data. The counts reflected in these sections should be used for example purposes only.*

When the **chemical** involved in an incident is unknown, WISER can assist in identifying it. This capability is accessed via the [Help Identify](#) button on the Main Window. It allows the user to select symptoms, properties, NFPA 704 hazard values, and substance categories to narrow down the list of possible substances. To return to the Main Window, select the Home button on the toolbar, or close Help Identify by clicking its close button (the 'X' in its top-right corner).

There are two main areas of the Help Identify. Most of the window consists of a set of tabs:

- a Start tab from which searches are initiated, a Properties tab for indicating physical properties of the unknown substance
- a Symptoms tab for entering symptoms of victims exposed to the unknown substance
- a Categories tab for entering the substance category(ies) that can be used to classify the substance
- a NFPA 704 tab for entering placard values
- an All Selected tab for viewing all of the properties, symptoms, substance categories, and NFPA 704 values together that have been selected so far for the search
- a Results tab that displays the results of the search

The bottom portion of the window consists of a progress bar that indicates the number of substances in the WISER data and how many of those substances are currently in the result set.



Searches are started from the **Start** tab. Select the **Properties**, **Symptoms**, **Categories**, and **NFPA 704** tabs to enter physical [properties](#) of the unknown substance, [symptoms](#) of victims of exposure, [substance categories](#) by which the substance can be classified, or [NFPA 704 placard values](#). As “search values” are entered on those tabs, the results set will shrink, as indicated by the progress bar at the bottom of the window. Finally, select the Results tab to display a list of the substances in the results set. Substances can be selected from there to display the [Data Window](#).

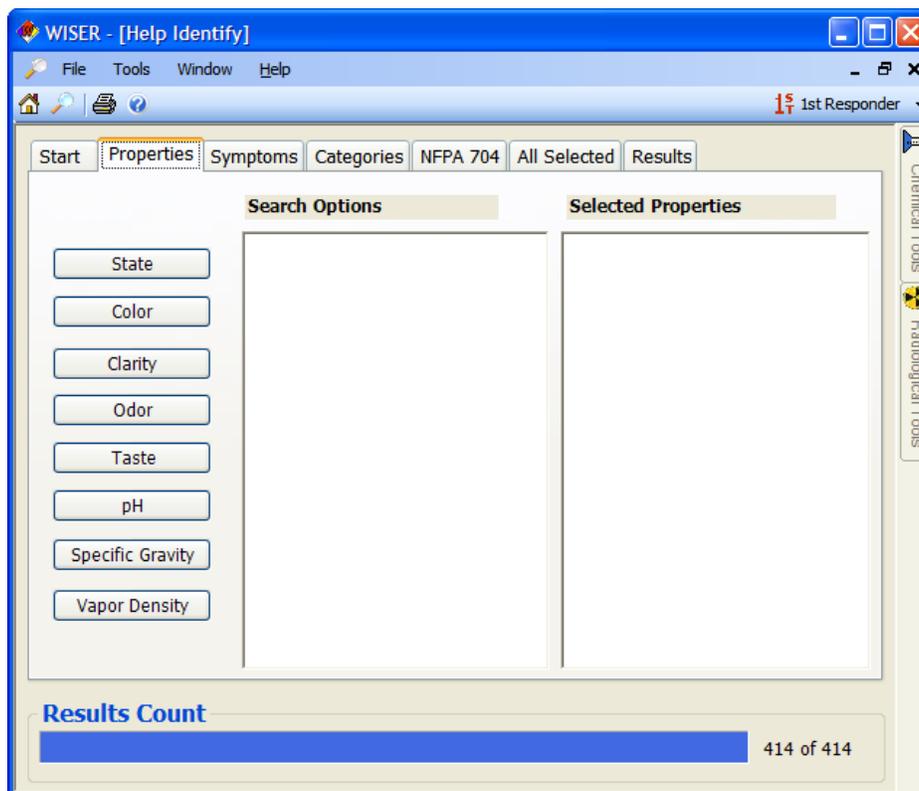
2.4.1. Start Tab

The Start tab is used to initiate 'searches' within the WISER substances for an unknown substance. The New Search button clears the selections of the current search. The progress bar resets to the maximum number of substances, and the search starts over.

Each time a new search is started, the selections of the previous search are saved so that they can be recalled later via the Previous... button. See Previous Searches Dialog below.

2.4.2. Properties Tab

To enter physical properties of the unknown substance, select the **Properties** tab.

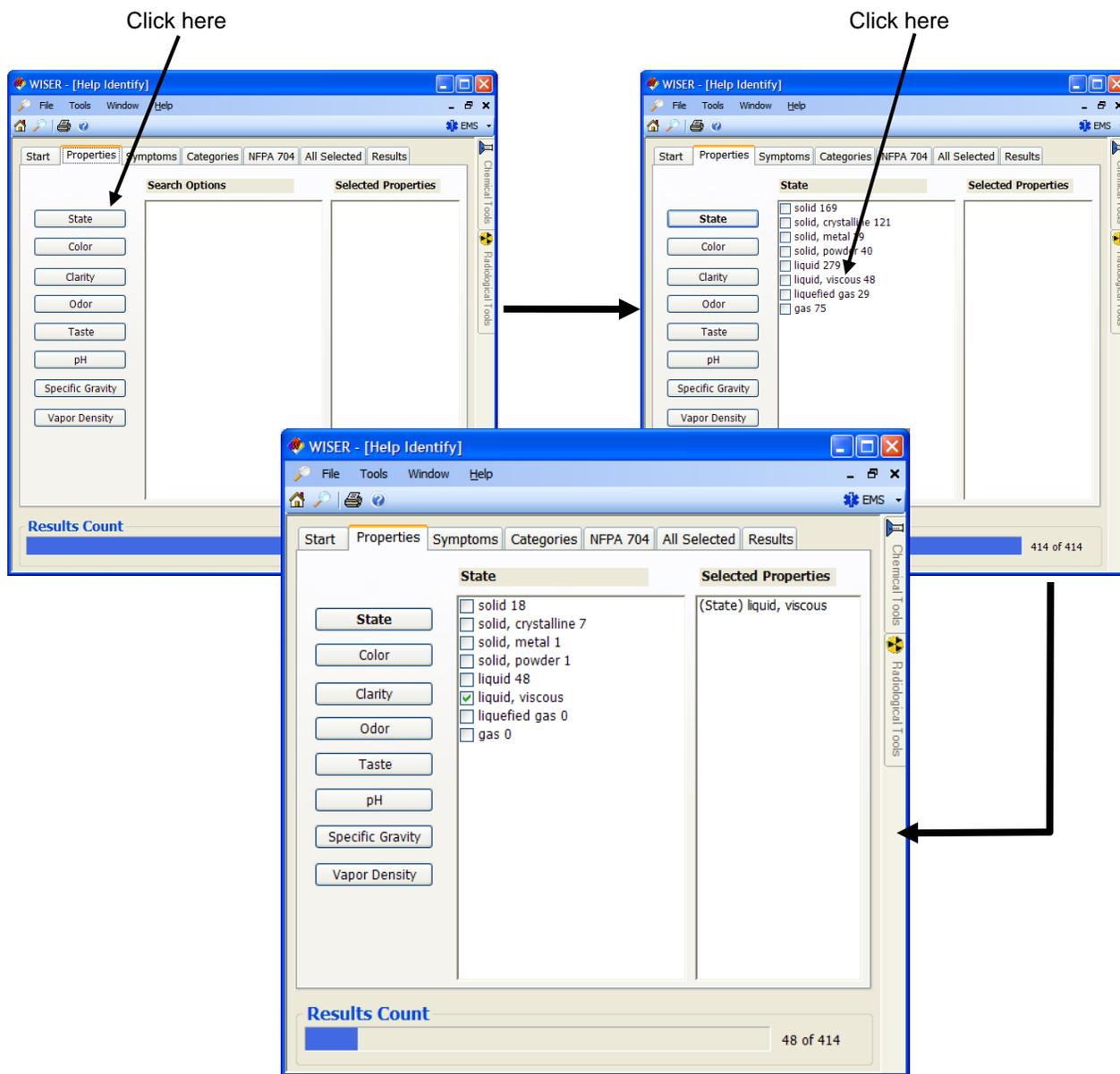


The main content of the Properties tab is a column of buttons representing the categories from which properties can be selected, and a list showing the current selections. The property categories consist of:

- State
- Color
- Clarity
- Odor
- Taste
- pH
- Specific Gravity (or Density)
- Vapor Density

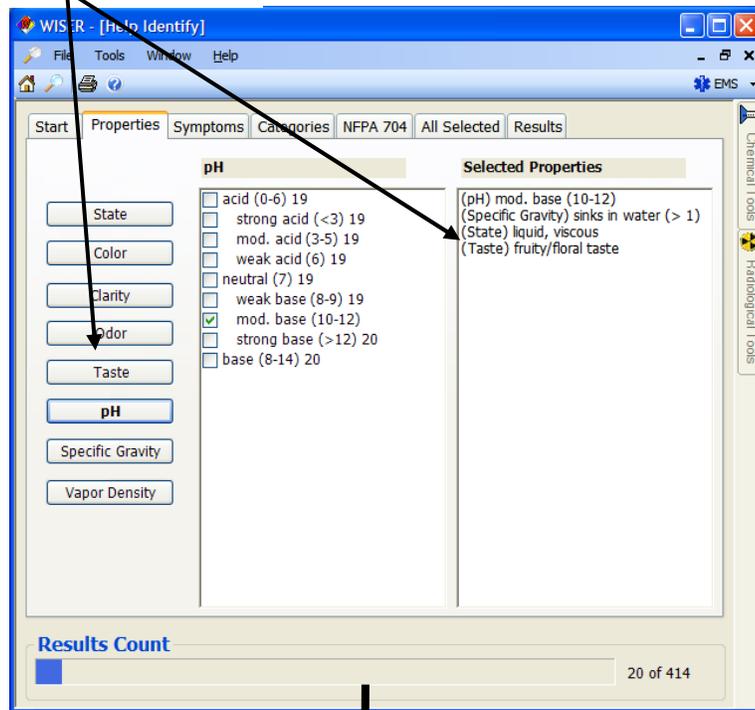
Selecting one of the category buttons, such as 'State', displays a list of the properties in that category. Next to each property option is an indication of the number of substances having data that match that property AND each of the other property, symptom, category, and NFPA 704 selections already made. Note that these numbers include substances that do not have sufficient data to determine whether or not there is a match. For example, in the odor category, the number displayed next to each odor option represents the number of substances that indicate that odor, plus the number of substances which don't have odor data, and thus it can't be determined if they have the odor. This follows the general philosophy that searches should err on the side of inclusiveness rather than exclusiveness, thus reducing the risk of the unknown substance being unintentionally excluded from the search results.

Following selection of a property, the Selected Properties list on the Properties page updates to reflect the selection. The steps in selecting a property are shown in the following figure.

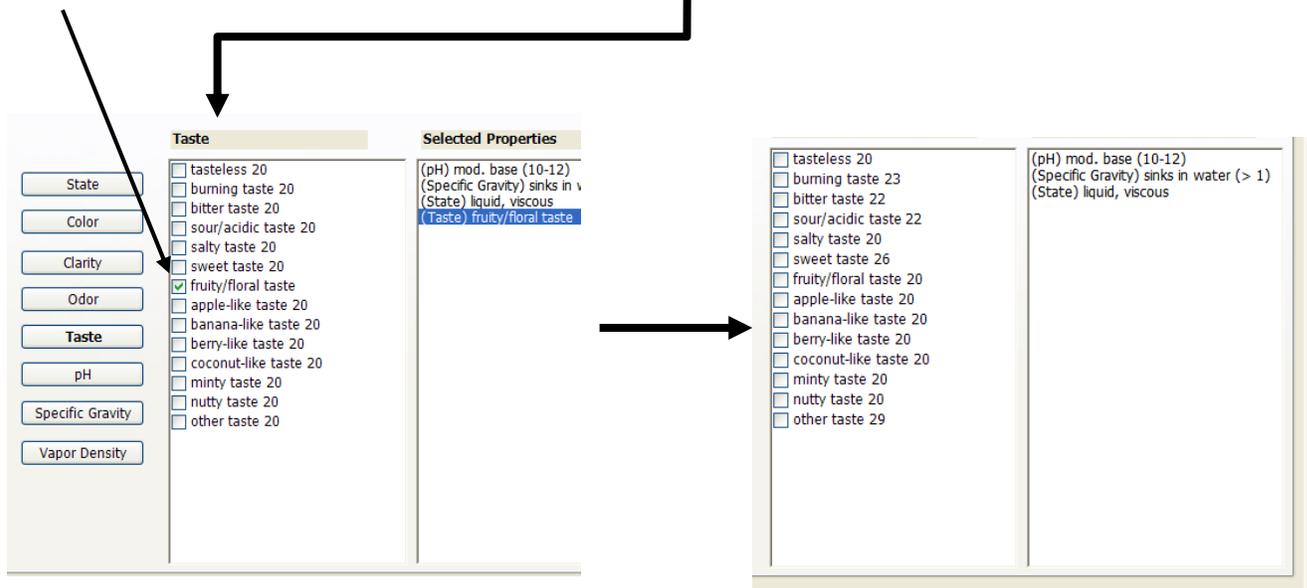


A property displayed in the Selected Properties list can be clicked to return to the category that it was selected from, just as if the corresponding category button was selected. The options in that category that are already selected have a check in their checkbox. Additional properties can be selected and selecting a checked property will uncheck it, removing it from the search. The following image illustrates the Selected Properties list following the selection of several properties, and demonstrates removal of one of those properties. Once the property is removed, you will see that the results count has increased, which reflects the addition of those substances that were previously removed. Also, the Selected Properties list no longer contains the removed property.

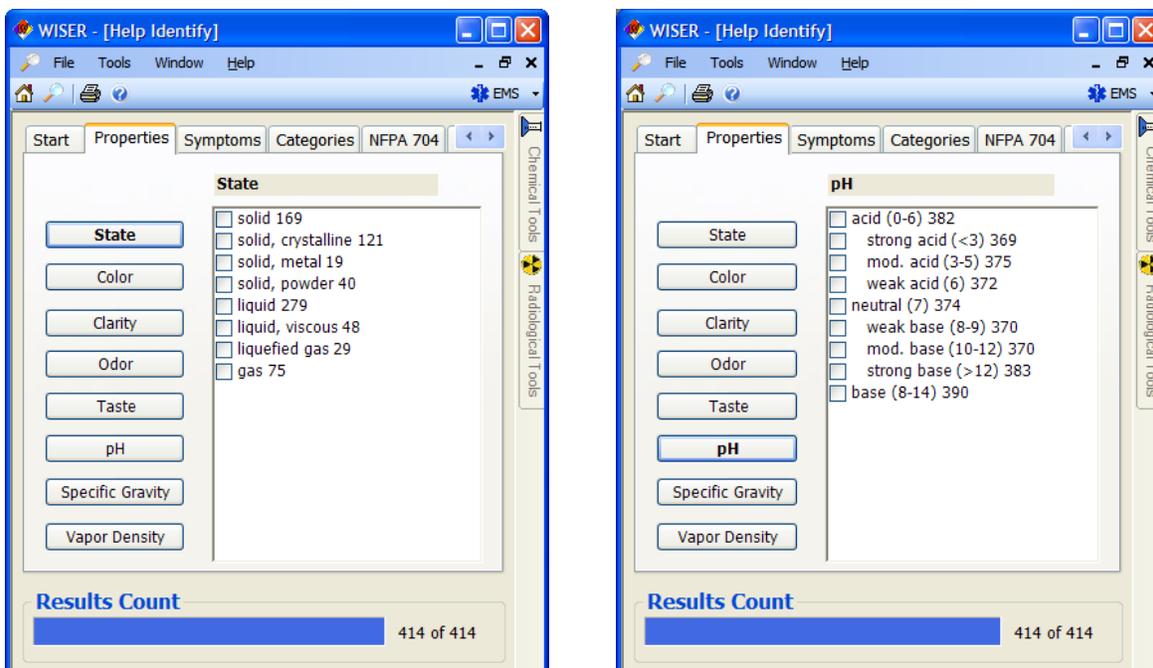
Click one of these



Reset the algorithm ar



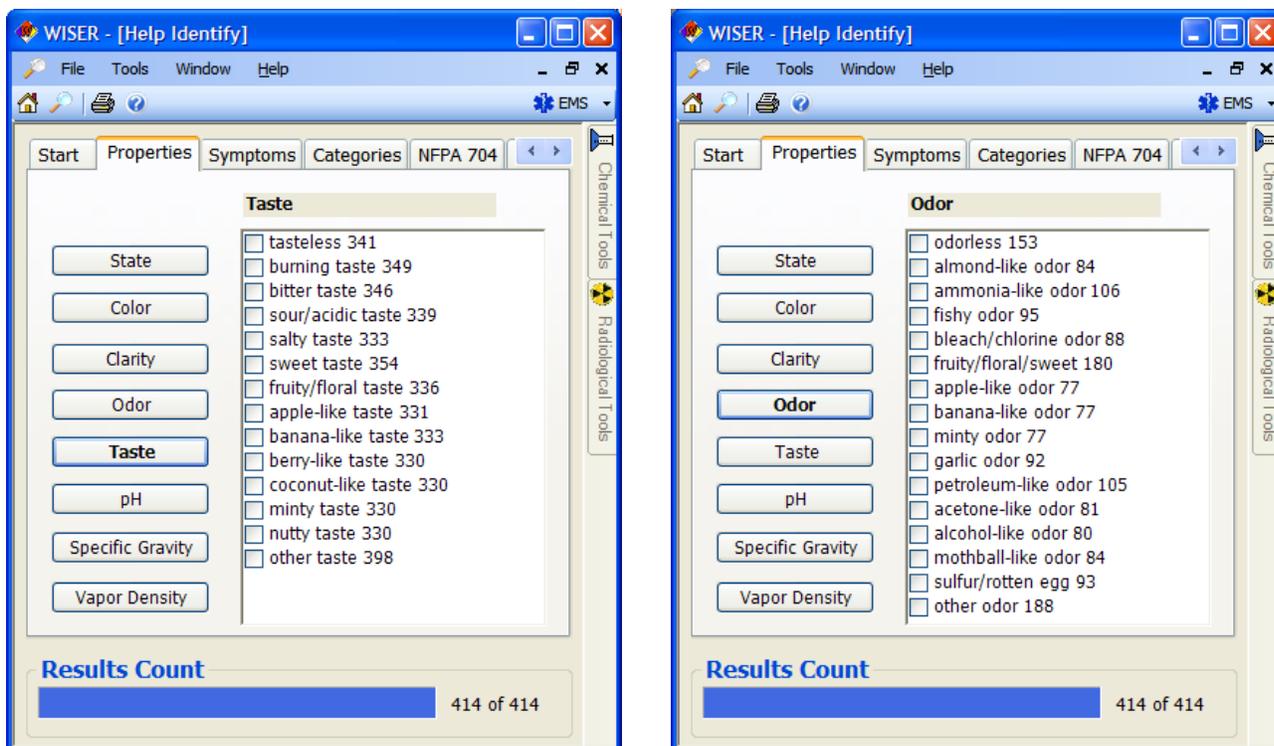
The next image illustrates two property lists that provide examples of related options, where one or more options are available that are more specific descriptions of a single more general option.



In the case of the State category, there is a 'solid' option, and then three additional solid options that are more specific, such as 'solid, crystalline'. The substances that will be matched by choosing the more general 'solid' option are inclusive of all the substances matched by one of the more specific options. If a more specific option is chosen, such as 'solid, crystalline', then selection of the more general 'solid' option is not necessary.

A similar situation exists for the pH category, where the broad ranges of acid and base can be selected, or a more specific range within those can be selected, such as "weak acid", "moderate acid", and "strong acid". In this case, indenting is used to help illustrate the relationships, and the names of the options are augmented with the numeric pH values that the named range applies to.

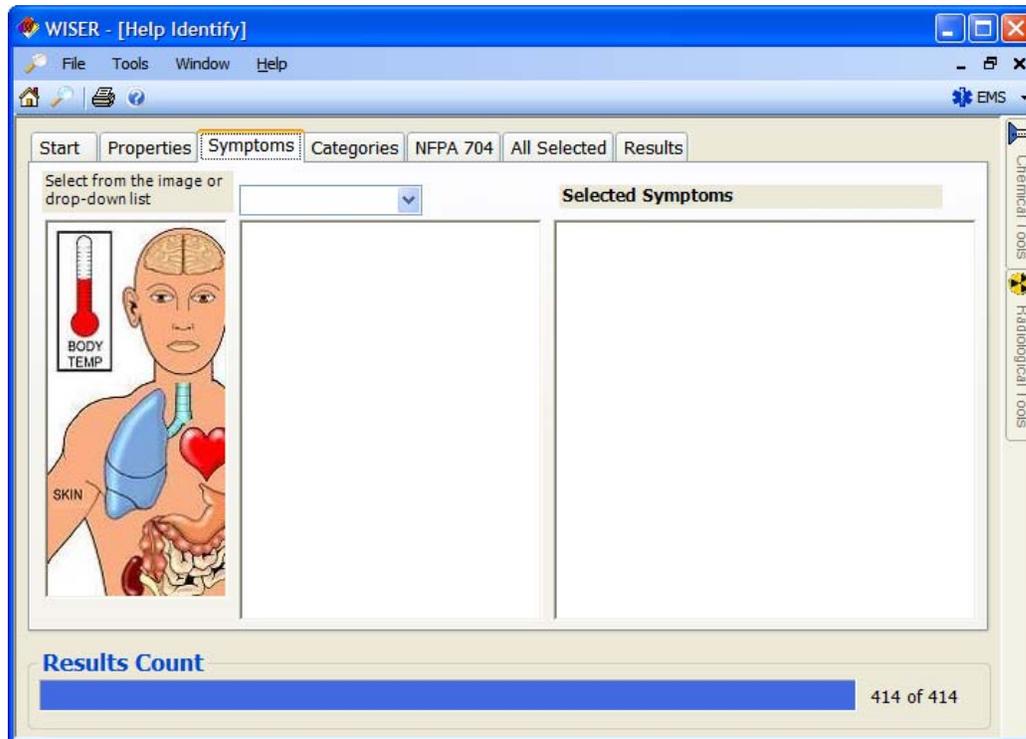
For the properties Odor and Taste, 'other odor' and 'other taste' options are available at the bottom of their respective property lists, as shown in the following figure.



The 'other odor/taste' options capture the substances that have an odor/taste, but not one that can be associated with one of the specific odors/tastes in the list. If you have odor or taste observations available, you should first examine the rest of the properties in the list, which begin with odorless/tasteless, and continue with specific odors/tastes. If a suitable match cannot be found, then resort to selecting the 'other' option at the bottom. ALL substances that include odor or taste data are included in the 'other' option; if a specific odor or taste is selected, then it would not be appropriate to also select the 'other' option.

2.4.3. Symptoms Tab

To enter patient symptoms of the unknown substance, select the **Symptoms** tab.



The main content of the Symptoms page is an image of a human body with selectable regions that identify the categories from which symptoms can be selected. A dropdown list above the image can also be used to select the categories. To the right of the image is a list showing the selectable symptoms for a given category and above this is a dropdown list which can also be used to select. On the far right is the list of symptoms that have been selected so far. The regions of the human body image that can be selected are shown below, with the names of the symptom categories to which they correspond (if different):

- brain (neurological category)
- eyes
- ears
- nose
- mouth and throat
- lung (respiratory category)
- heart (cardiovascular category)
- stomach/kidney (gastro/urinary category)
- arm (skin category)
- thermometer (body temperature category)

Selecting one of the above areas of the body, such as the brain, displays a list of the symptoms options in the corresponding symptom category, such as 'neurological'. Next to each symptom option is an

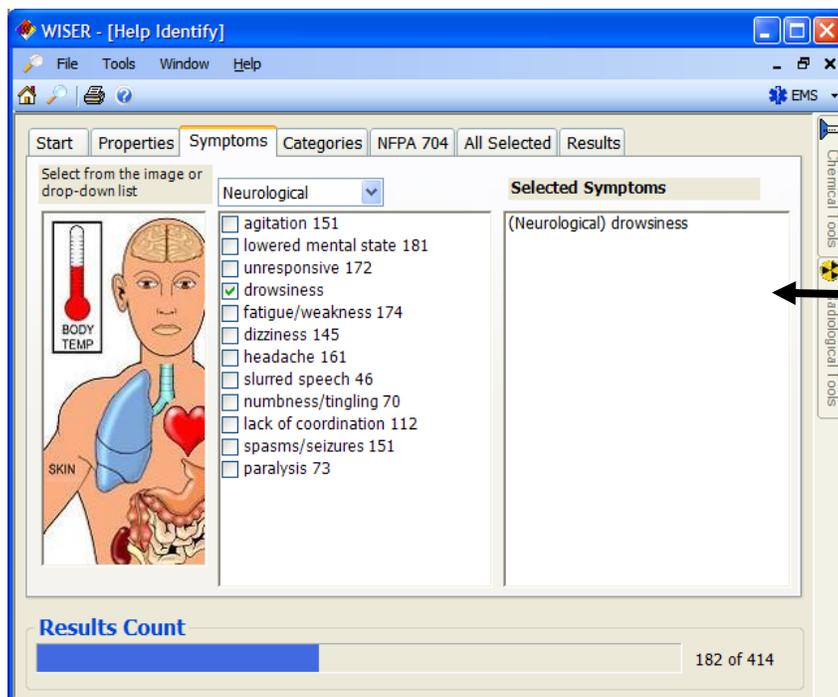
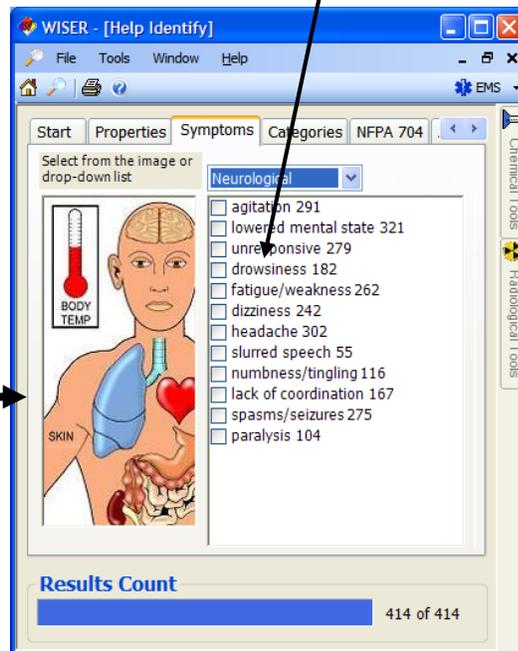
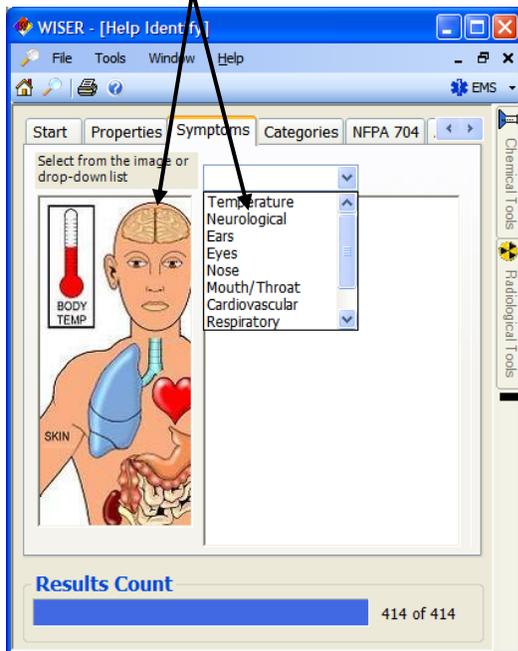
Note that following characteristics of the symptom options:

- The number of substances displayed next to the symptom options includes substances that do not have sufficient data to determine whether or not there is a match. In other words, the number represents the number of substances that cause that symptom, plus the number of substances which don't have symptom data, and thus it can't be determined if they cause the symptom. This follows the general philosophy that searches should err on the side of inclusiveness rather than exclusiveness, thus reducing the risk of the unknown substance being unintentionally excluded from the search results.
- Symptoms are placed in the categories where they are observed. For example, "cyanosis/blue" is a symptom in the skin category. Cyanosis is not a skin symptom, but signs of cyanosis are evident in the skin.
- Symptoms may occur in more than one category. Sneezing, for example, can be found both in the Nose and the Respiratory categories. Other examples are Hypoxia/Cyanosis (Respiratory and Cardiovascular categories), Numbness/Tingling (Skin and Neurological categories), and Coughing/Choking (Respiratory and Mouth/Throat categories). For such options, the number of substances displayed next to the symptom in one category may not match the number displayed next to it in another category. This is because of the inclusion in those numbers of substances that don't have data. For example, the number of substances known to cause sneezing will be the same regardless of whether sneezing is chosen from the nose or respiratory category, BUT the number of substances that do not have symptom data for the nose category may be different than the number that do not have data for the respiratory category. Thus, the inclusion of these "unknowns" may produce slightly different results depending on from which category sneezing is selected.

Following selection of a symptom, the **Selected Symptoms** list on the Symptoms page is updated to reflect the selection. The steps in selecting a symptom are shown in the following figure.

Click one of these

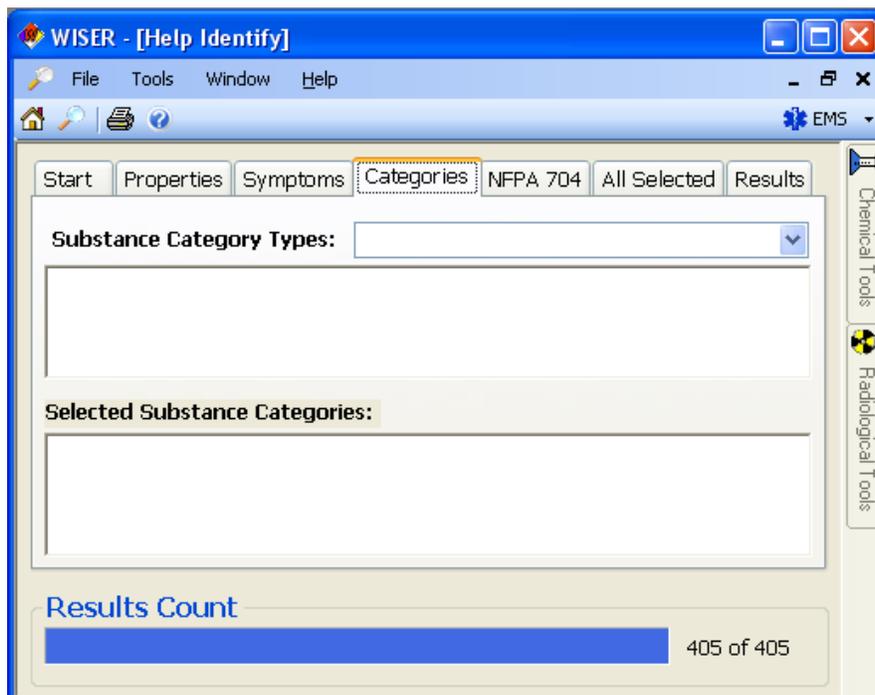
Click here



A symptom displayed in the Selected Symptoms list can be selected to return to the category that it was selected from, just as if the corresponding region of the body image was selected. The options in that category that are already selected have a check in their checkbox. Additional symptoms can be selected and selecting a checked symptom will uncheck it, removing it from the search as with the removal of the properties as seen in the previous section.

2.4.4. Categories Tab

The **Categories** tab allows for the selection of categories/classifications that can be associated with the unknown substance, thus reducing the results list to contain only those substances that are members of the selected substance category or categories. For example, if the unknown substance is in a methamphetamine lab, then selection of the “meth lab” substance category will reduce the substance list to contain only the WISER substances that are typically present in a meth lab. Or, consider an unknown substance that is a burning liquid. The “Class 3 – Flammable liquids” DOT Hazard classifications can be selected, and the results list will then contain only those substances that are members of that class.



The main content of the Categories tab is a dropdown list representing the types of categories, a list of the category options for the selected type, and a list showing the current category selections. The types of categories, and the options available within each, are currently as follows:

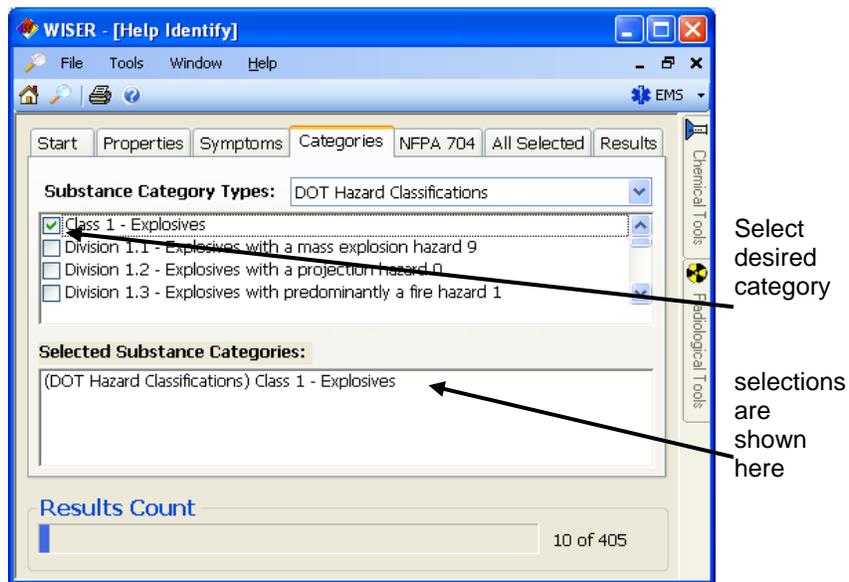
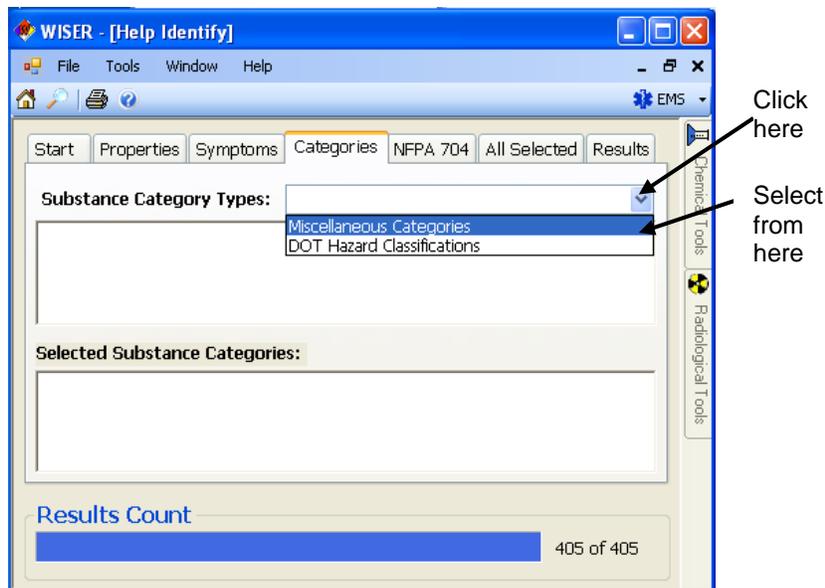
- Miscellaneous categories; the options consist of:
 - Meth Lab
 - Chemical weapons precursors
- DOT Hazard Classifications; the options consist of each of the classes and divisions defined by this classification scheme

Selecting one of the category types, such as DOT Hazard Classifications, displays a list of the substance categories that can be selected for that type. Next to each category option is an indication of the number of substances having data that match that category AND each of the other property, symptom, category, and NFPA 704 selections already made.

Following selection of a category, the Selected Substance Categories updates to reflect the selection. The steps in selecting a substance category are shown in the following figure.

A category displayed in the Selected Substance Categories list can be clicked to return to the category list that it was selected from, just as if the corresponding category type was selected from the drop-down list of type. The options in that category list that are already selected have a check in their checkbox. Additional categories can be selected, and selecting a checked category will uncheck it, removing it from the search.

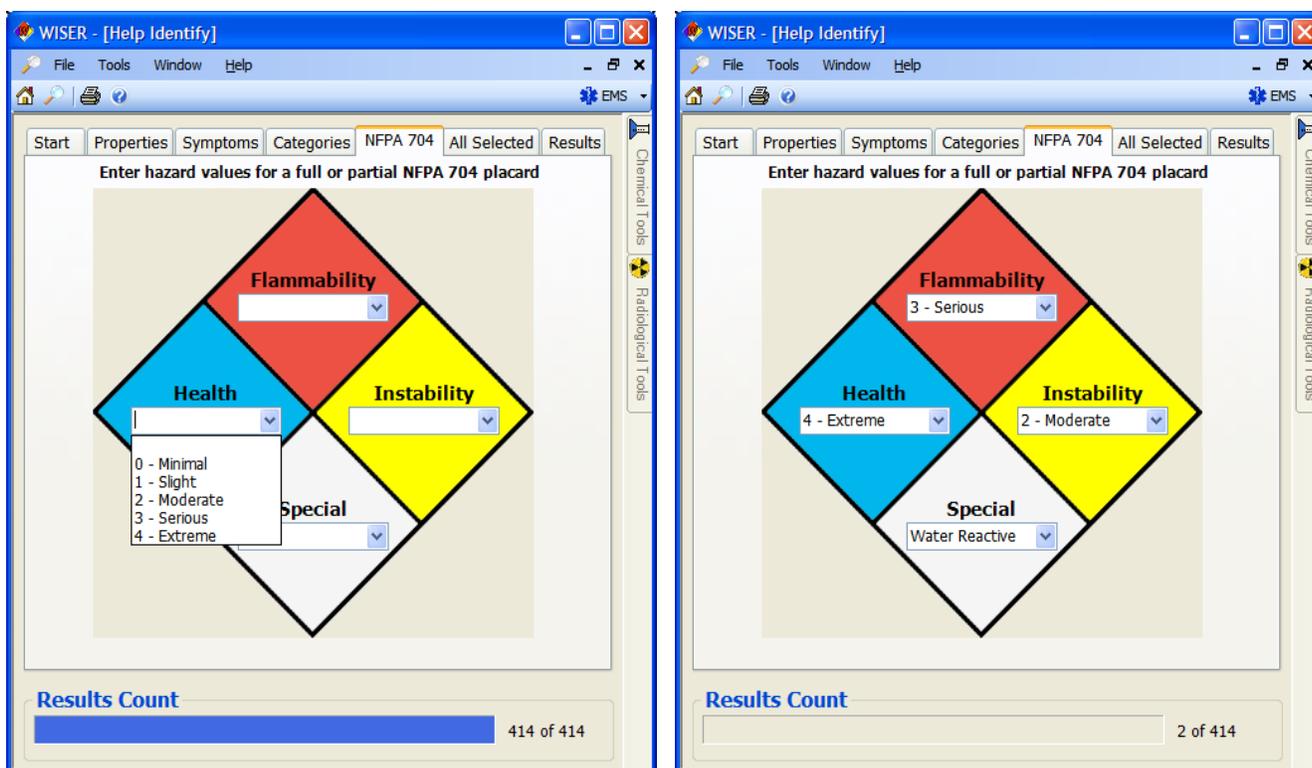
Note that, in the case of the DOT Hazard Classification categories, there is a hierarchical relationship between some of the options, namely, classes that can be further broken down into divisions. For example, in addition to being able to choose the "Class 1" category, there are also individual divisions within that class that can be chosen. If choosing the more general "Class 1", the matched substances are inclusive of all of those that are also matched by each of the division 1.x categories. Note, however, that choosing each of the division options separately is NOT the same as choosing the Class option by itself; if each of the divisions were chosen, a substance would have to be a member of each one of those divisions to result in a match.



2.4.5. NFPA 704 Tab

To enter hazard values from an NFPA 704 placard, select the **NFPA 704** tab. This presents the hazard placard diamond that identifies the health, flammability, instability, and special hazards of a material and the degree of severity for each.

From a given placard, enter the observed values into the corresponding hazard diamonds, using the drop-down list in each of the diamonds that provides the list of severity values. As each value is entered, the results count decreases. This reflects the narrowing down of the results list to include only those substances whose NFPA 704 data matches the values that have been input, **AND** which match any other property, symptom, and category data that has been entered on the other tabs.

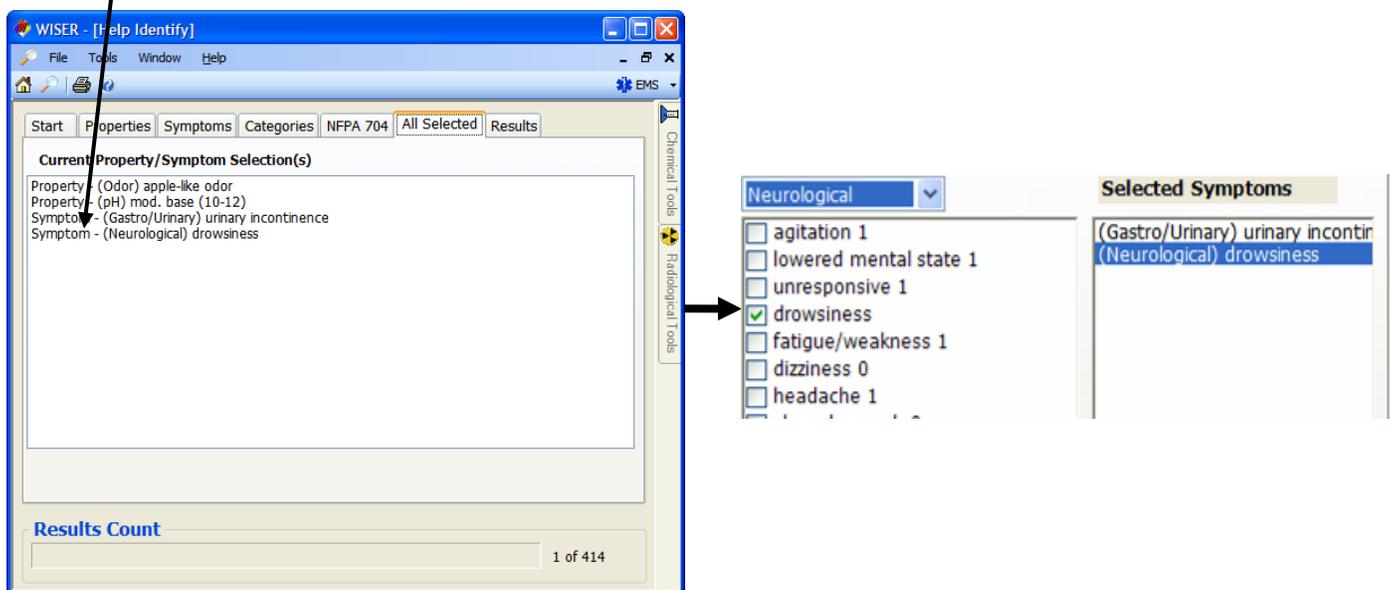


The NFPA 704 searching tool supports both full and partial placard inputs. Simply leave the selection blank for any hazard diamond for which data is not available (for example, part of the placard is destroyed or otherwise not legible). The results will reflect those substances that have documented NFPA 704 ratings matching the provided hazard inputs, ignoring the hazard data that has been left blank and excluding substances for which NFPA 704 ratings are unknown. In addition, note that this feature is only intended for placards that represent a single substance. If a single placard is being used for an area where many chemicals are present, the placard will summarize the maximum ratings in each category, the combination of which may not match any of the individual substances or any of the substances in WISER.

2.4.6. All Selected Tab

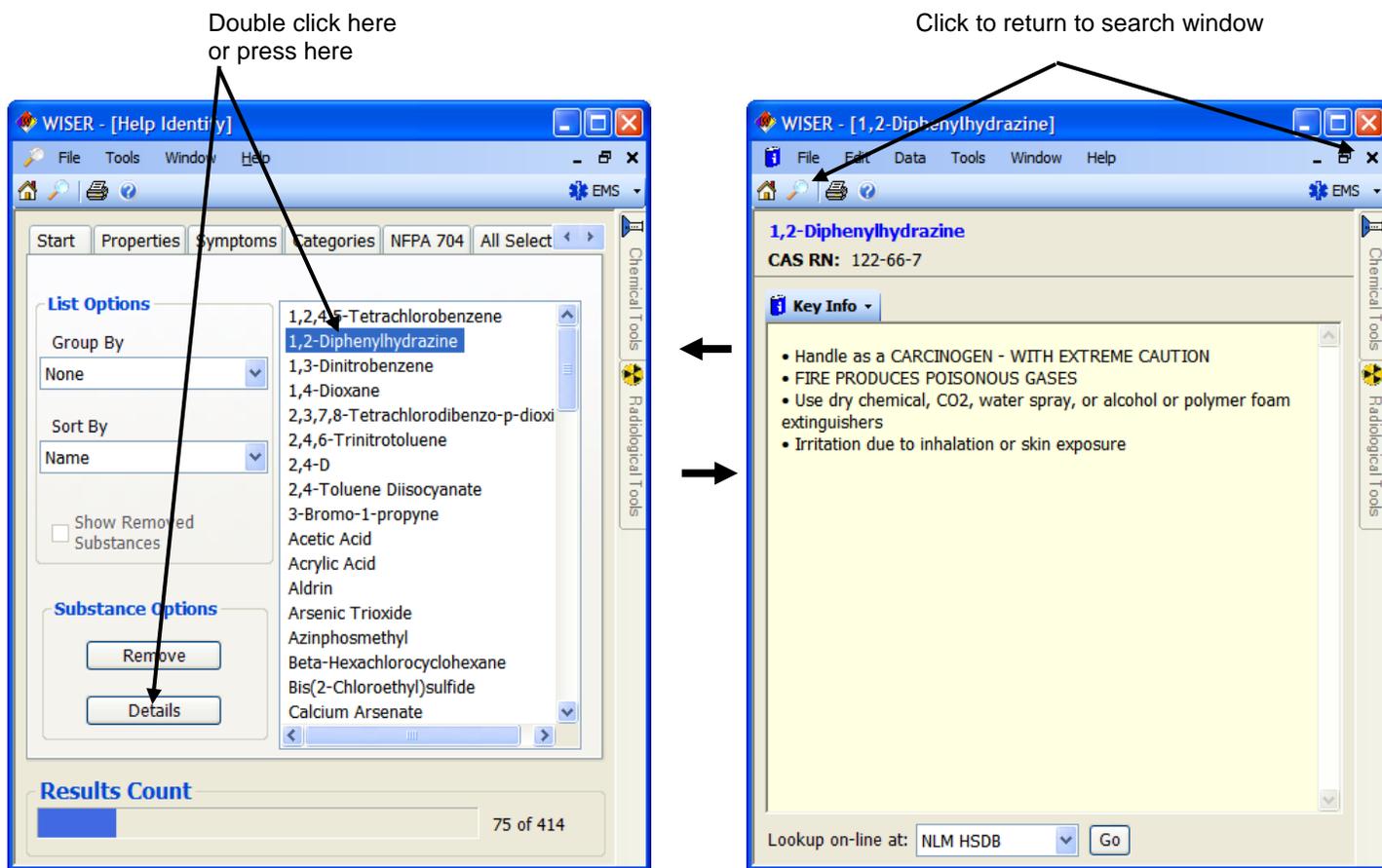
The All Selected tab displays all of the selected symptoms, properties, categories, and NFPA 704 hazard values that have been chosen while trying to identify a substance. At any time during a search this tab can be selected to view this cumulative list of selections. Double-clicking on an item in the list will switch to the tab that corresponds to that item, with the corresponding category selected, at which point the selected item could be removed or additional selections made.

Double-click here



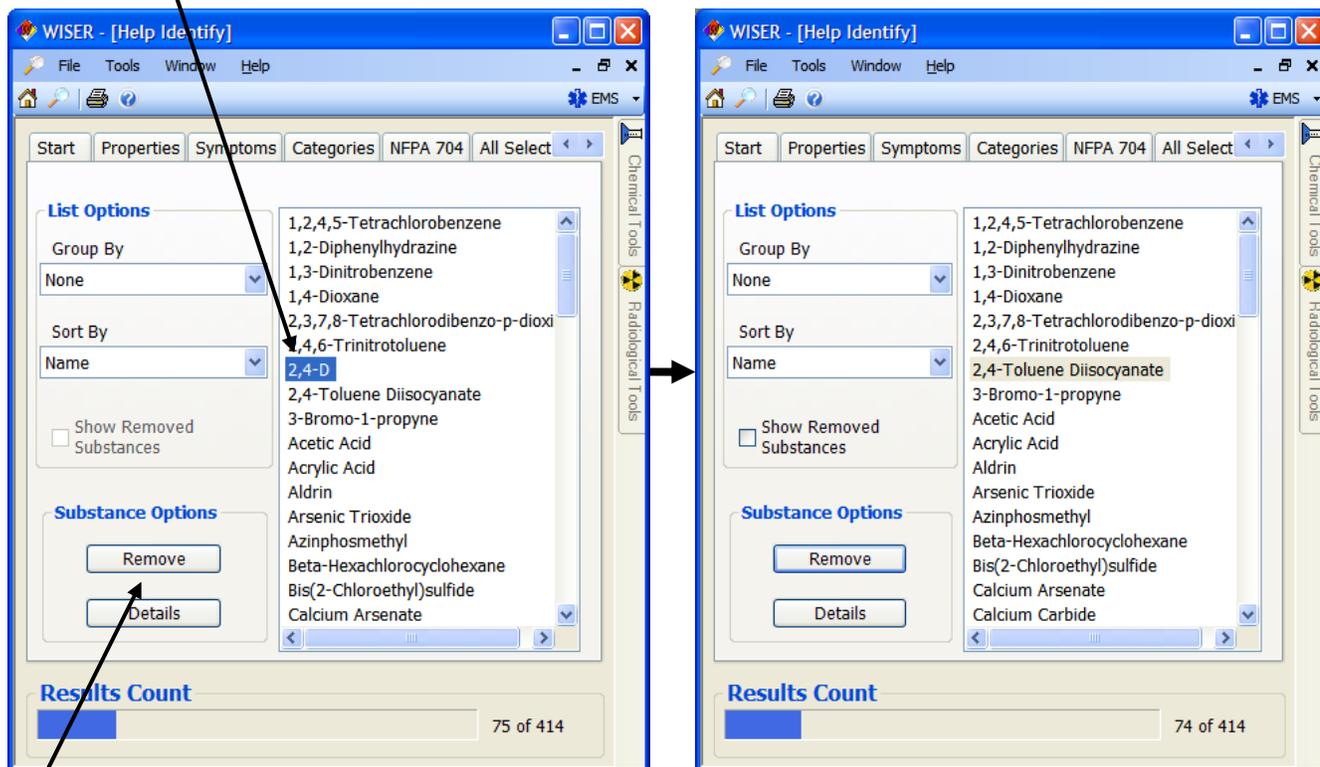
2.4.7. Results Tab

The Results tab displays a list of the substances that match ALL of the properties, symptoms, categories, and NFPA 704 hazard values that have been selected during a search for an unknown substance. Double-clicking a substance in this list displays the Data Window, the same as selecting a substance from the Main Window. Pressing the Details button will also display the Data Window. Both methods are shown below. To return to the search results, press the back button on the toolbar, or close the Data Window with its close button (the 'X' in its top-right corner); the toolbar's Home button returns to the Main Window.



If a substance in the list is known to not be the unidentified substance, remove it from the results by clicking once to select it in the list, and then press the Remove button as shown in the following figure. Or, right-click on the substance and select 'Remove' from the resulting pop-up menu.

Click here to highlight substance

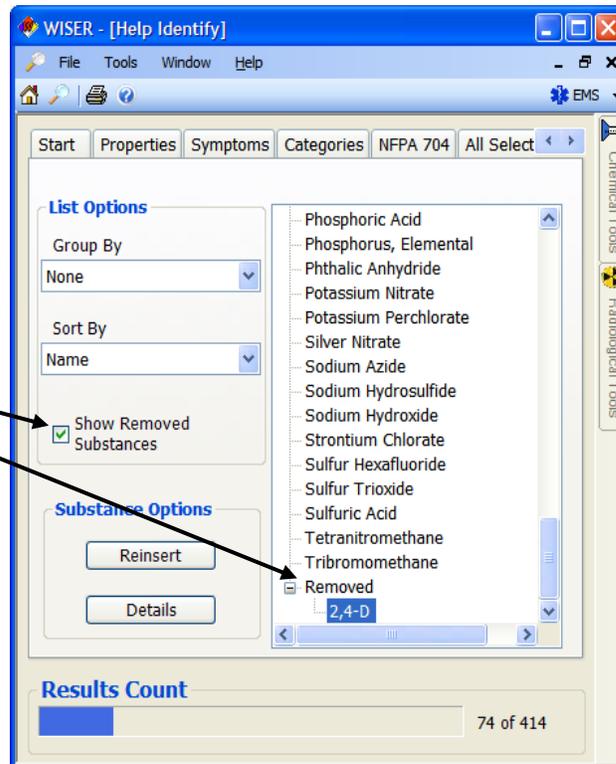


Click here to remove substance

The size of the results list indicated next to the progress bar decrements to indicate the removal.

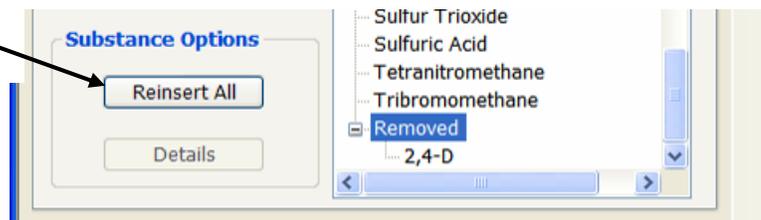
Any substances removed in this manner can be displayed again if the Show Removed checkbox is checked, as shown in the next figure.

Selecting the “Show Removed Substances” checkbox results in a “Removed” node in the list with all of the substances that have been removed under it.



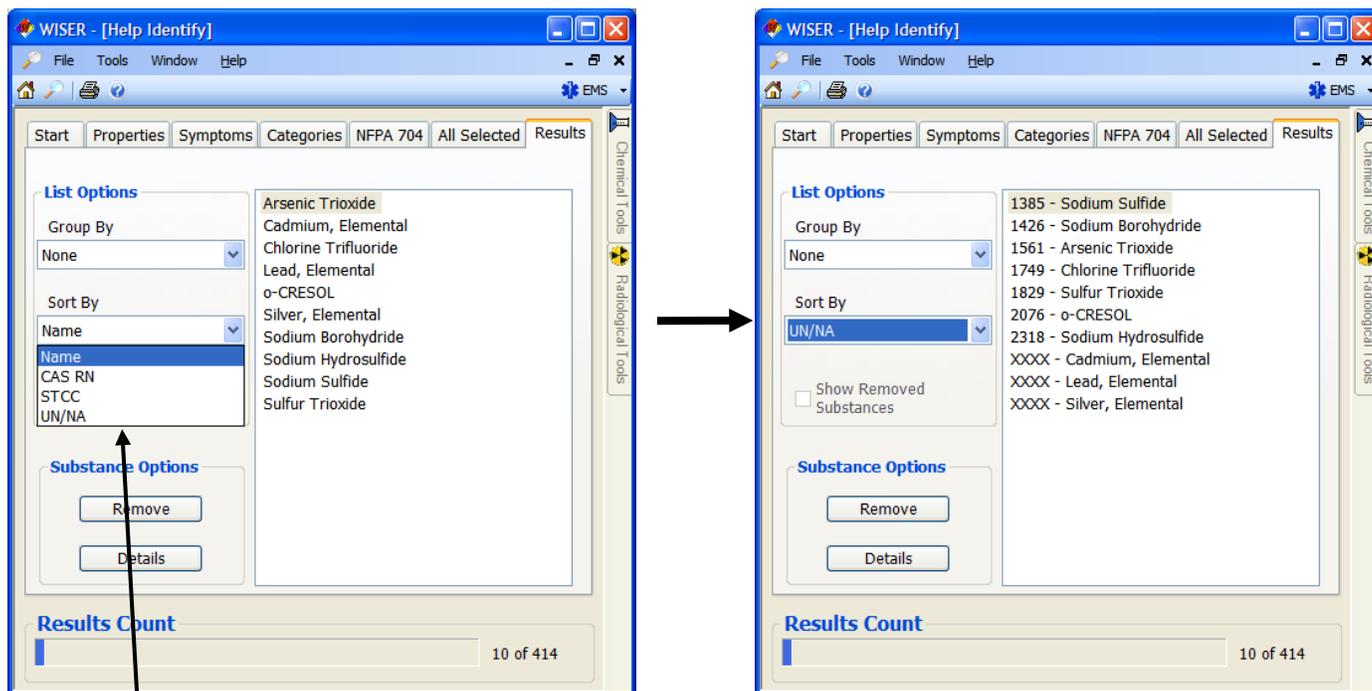
As shown above, when removed substances are shown, they appear as children of a collapsible “Removed” list item. Such items can be reinserted into the list by again clicking the substance, and pressing the Reinsert button. Clicking on the “Removed” list item will change the text on the Reinsert button to Reinsert All, which can be used to reinsert all of the substances under the “Removed” list item. When substances are reinserted back into the result list, they are removed from the “Removed” list item and placed back into the main result list. Reinsertion can also be performed by right-clicking on a removed substance or the “Removed” list item and then selecting the reinsert option from the resulting pop-up menu. When there are no substances left to reinsert the “Removed” list item is removed from the result list.

Press to reinsert all of the substances.



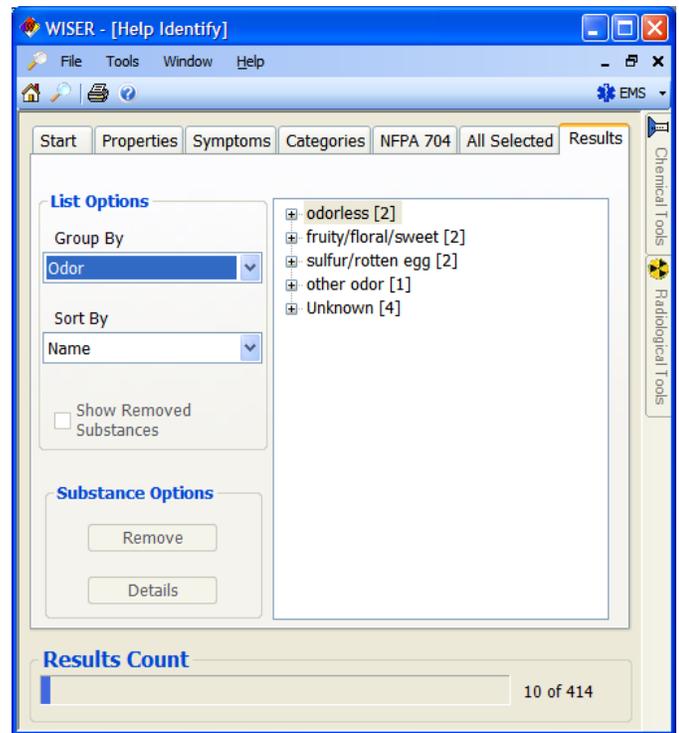
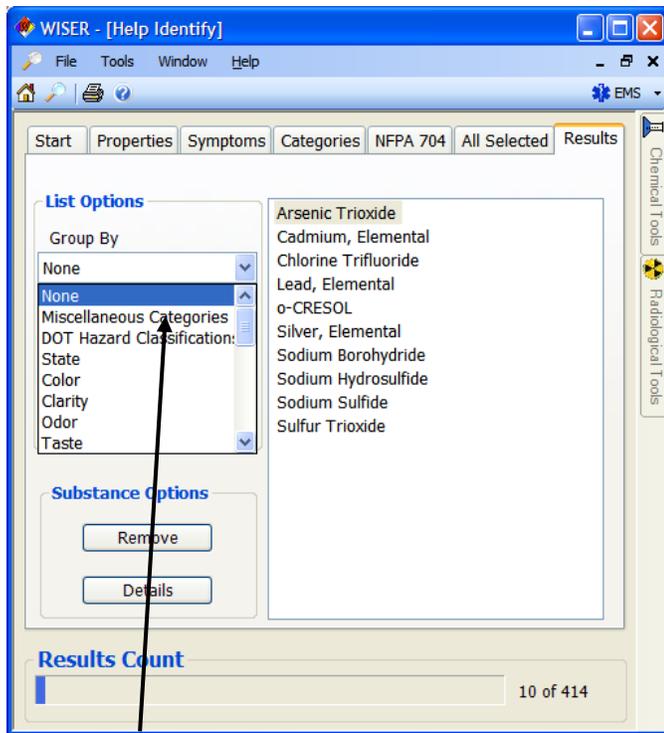
The Sort By pull-down menu controls the ordering of the results list. By default, the list is sorted alphabetically by name. It can also be sorted by the following identification numbers: UN/NA, CAS

registry, and STCC. When sorted by a number, the substance names are prefixed with the chosen number type. If a substance does not have the selected number assigned, 'X' characters are used as placeholders. In the next figure, the results list is ordered by UN/NA number, but three of the substances do not have such a number.



Click here and select UN/NA

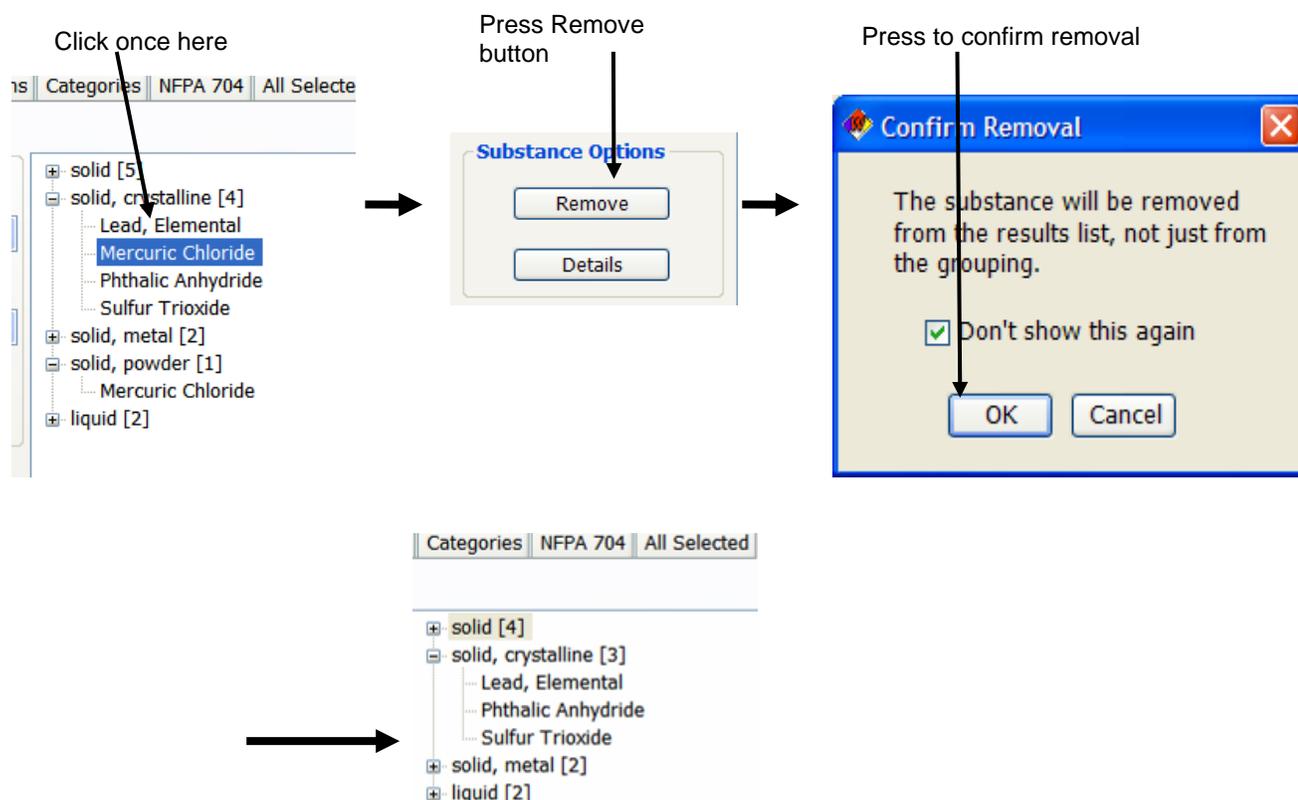
The Group By pull-down menu groups the substances in the list by one of the property, symptom, substance category, or NFPA 704 hazard groupings. When a grouping from this menu is selected, the results list changes to a list grouped by the properties, symptoms, category, or NFPA 704 hazards in the selected grouping. Each is followed by a number indicating how many substances are in the grouping. Grouping for properties, symptoms, categories, or NFPA 704 hazards that do not contain any substances are not shown. The list of groupings may be augmented with an "Unknown" grouping. This contains the substances which do not have data for the corresponding group, and thus it is not known whether any of the options in the selected grouping apply.



Click here and choose one

To view the substances within each grouping, expand the grouping by clicking the “plus sign” to the left of the groupings. Click again to collapse.

When the results list is grouped, substances can still be removed (though the groups themselves cannot be removed). Note that when a substance is removed from a grouped display, that substance is removed from the results list, not just from that grouping. In other words, that substance will be removed from all groupings in which it occurs. To make this clear, removal of a substance from a grouped results list results in a confirmation dialog, as illustrated in the following figure.

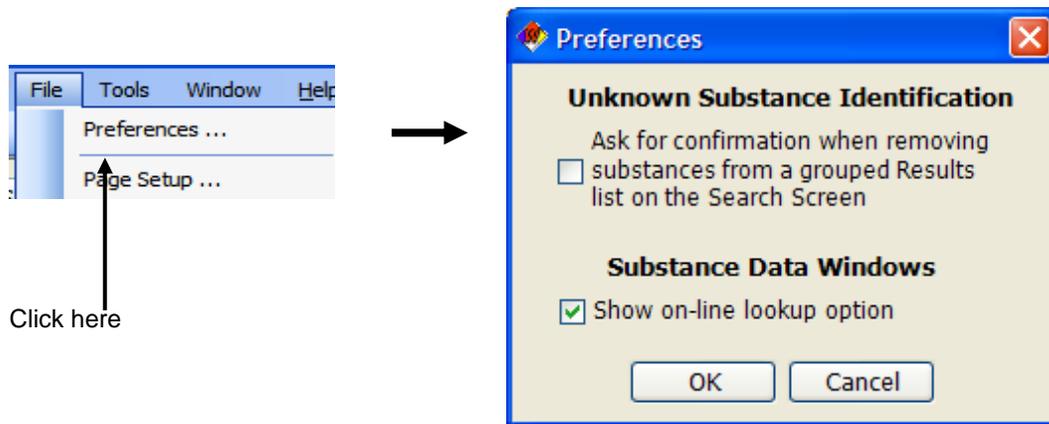


In this example note that following the removal of Mercuric Chloride, not only has it been removed from the “solid, crystalline” grouping, but it has been removed from the “solid, powder” grouping as well. Since all substances had been removed from a grouping, the group was removed. Groupings will never have a count of [0].

To remove substances from a grouped list without the confirmation dialog shown in the above example, check the “Don't show this again” option before selecting the OK button. This option can also be toggled in the Preferences dialog (see the Search Preferences section below).

2.4.8. Search Preferences

User preferences that affect Help Identify are available on the Preferences Dialog, accessed from the File menu seen in the following figure:



The one option currently available on the Preferences dialog controls whether or not a confirmation dialog is presented when a substance is removed from the Results list while that list is grouped. This is detailed in the Results Tab section above.

2.4.9. Previous Searches Dialog

A fixed number of previous searches are automatically saved and can be resumed. Select the Previous... button on the Start tab to display a list of the saved previous searches. Up to 10 previous searches are available, with each providing an indication of the number of substances matched by the search. Double-click one of the previous searches in the list or select one of the items in the list and then press the OK button. The dialog closes, returning to Help Identify, where the property, symptom, category, and NFPA 704 selections from the chosen previous search have been restored. This process is illustrated as follows.

Click here

Double click here

WISER - [Help Identify]

Start Properties Symptoms Categories NFPA 704 All Sele

Identify Substance

Using the tabs above, select patient symptoms and/or sut physical properties and/or NFPA 704 placard values to na list of possible substances.

To start search over:

To see previous searches:

Results Count

WISER - [Previous Search Results]

Previous Searches

- Saved 16 - 7/16/2007 3:26 PM - 164 substances
- Saved 15 - 7/16/2007 3:25 PM - 4 substances
- Saved 14 - 7/16/2007 3:11 PM - 12 substances
- Saved 13 - 7/16/2007 11:03 AM - 6 substances
- Saved 12 - 7/16/2007 10:48 AM - 1 substances
- Saved 11 - 7/16/2007 10:37 AM - 2 substances
- Saved 10 - 7/16/2007 10:33 AM - 182 substances
- Saved 9 - 7/16/2007 10:22 AM - 6 substances
- Saved 8 - 7/16/2007 10:20 AM - 304 substances
- Saved 7 - 7/16/2007 10:06 AM - 233 substances

The previous search has been loaded and the result count reflects the previous search count.

Click the cancel button to exit without selecting a previous search

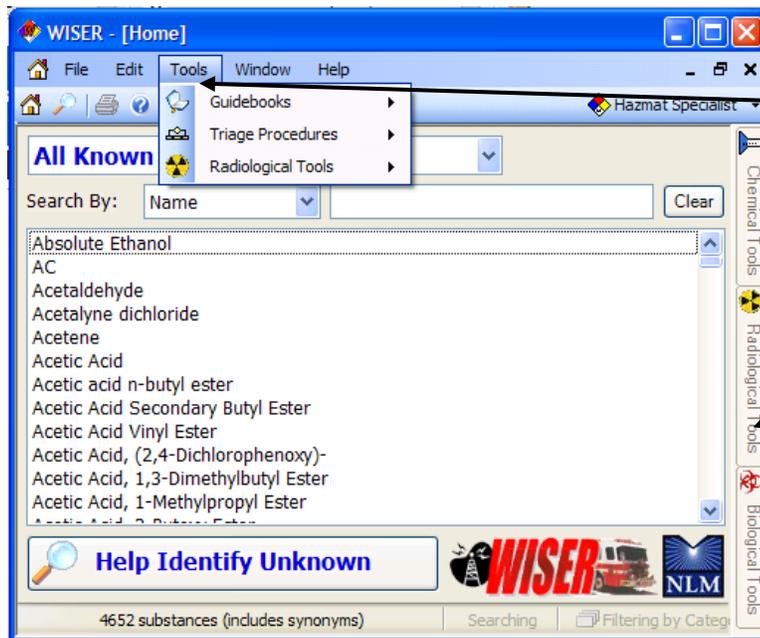
Results Count

4 of 414

2.5. Tools

“Tools” refers to a set of utilities and reference materials available within WISER which are not specific to WISER substance data.

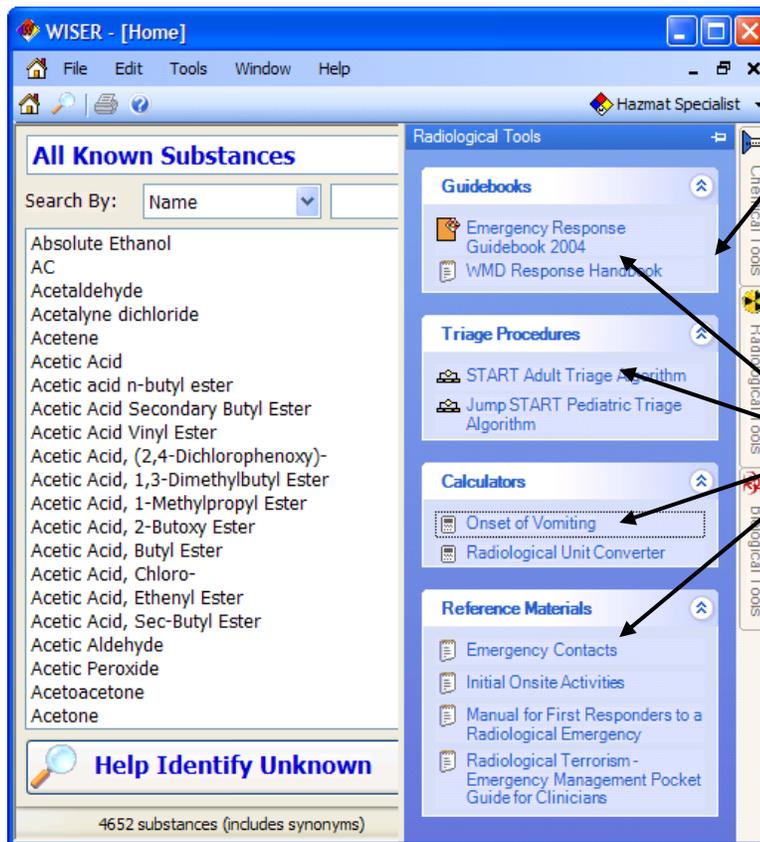
A “Tools” menu on the application window's main menu bar can be used for accessing the tools, though a more visual method of accessing them is via the “Radiological Tools”, “Biological Tools”, and “Chemical Tools” tabs on the right edge of the application window. To display the available options, move the mouse over (“mouse-over”) the desired tab. A “toolbox” dialog will automatically pop up, floating over the other windows, and then automatically close when the mouse is moved off it. If a tab is clicked (instead of mousing over it), then the toolbox will remain open until the mouse is clicked outside of it.



Use this menu option to access tools, or...

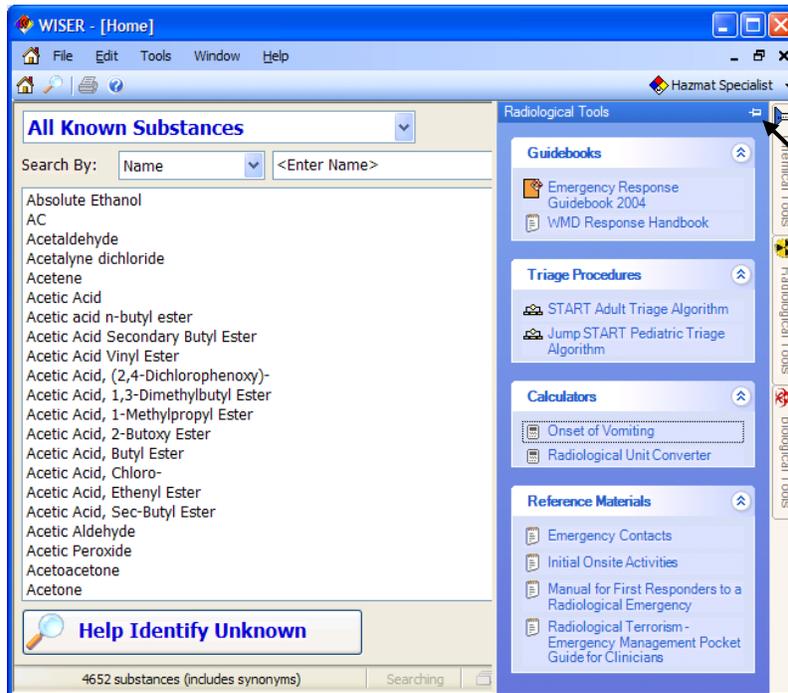
...move the mouse over one of these tabs, or click on a tab ...

... and the corresponding "toolbox" appears



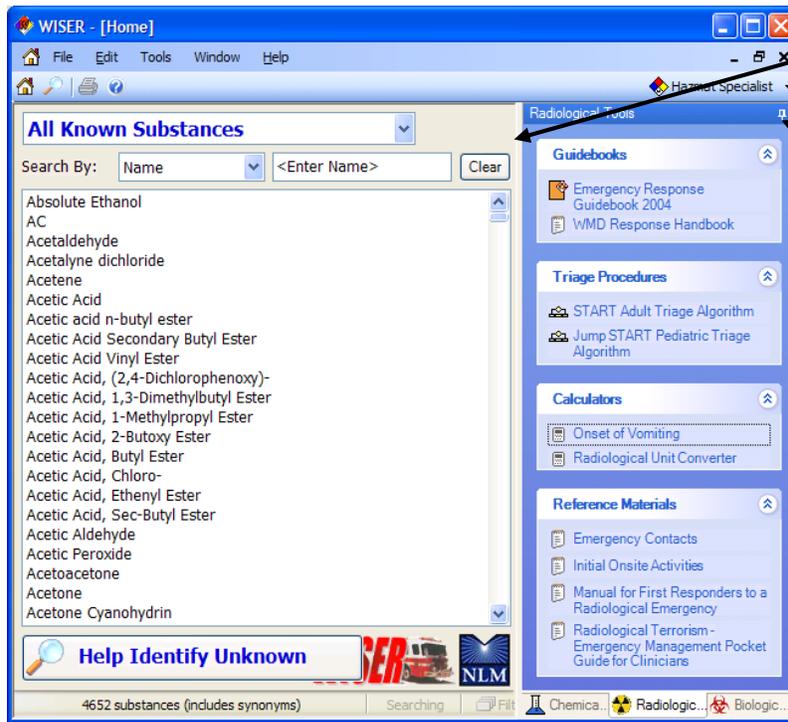
Click on one of the options within the toolbox to launch the tool

The toolbox can also be made to remain open and share the application window with the other content (rather than floating over top of it) by “pinning” the toolbox. This is done by clicking the thumbtack, as shown below.



Click the thumbtack to “pin” the toolbox...

... and the application window splits between the main content and the toolbox



Click the thumbtack again to “unpin” the toolbox

Selecting any of the tools within a toolbox will open a new window for the tool.

A separate toolbox is available for each of the three substance types (chemical, biological, radiological) to capture tools relevant to dealing with incidents of the respective types. Tools which are common to all substance types will appear in each toolbox. For example, the ERG tool is available in each of the toolboxes, while the Radiological Tools includes several tools specific to radiation events.

Within each toolbox, and within the Tools menu of the main menu bar, tools are grouped as follows:

- Guidebooks (common to all substance types)
 - Emergency Response Guidebook: a comprehensive, fully-searchable electronic version of the DOT ERG
 - WMD Response Guidebook: view the guide pages of this publication
- Triage (common to all substance types)
 - START Adult Triage Algorithm: the user is led step-by-step through the algorithm until a tag assignment can be determined
 - JumpSTART Pediatric Triage Algorithm: the pediatric version of the START algorithm
- Radiological Tools
 - Calculators
 - ◆ Dose Estimator – Onset of Vomiting: estimation of whole-body radiation dose based upon the onset of vomiting
 - ◆ Radiation Unit Converter: provides conversion between various standard and international units
 - Reference Materials – browsing of the following documentation is provided:
 - ◆ Emergency Contacts
 - ◆ Initial Onsite Activities
 - ◆ Manual for First Responders to a Radiological Emergency (action guide excerpts for on-scene roles)
 - ◆ Radiological Terrorism – Emergency Management Pocket Guide for Clinicians

These tools can be considered as consisting of three general types, which are detailed further in the subsections which follow:

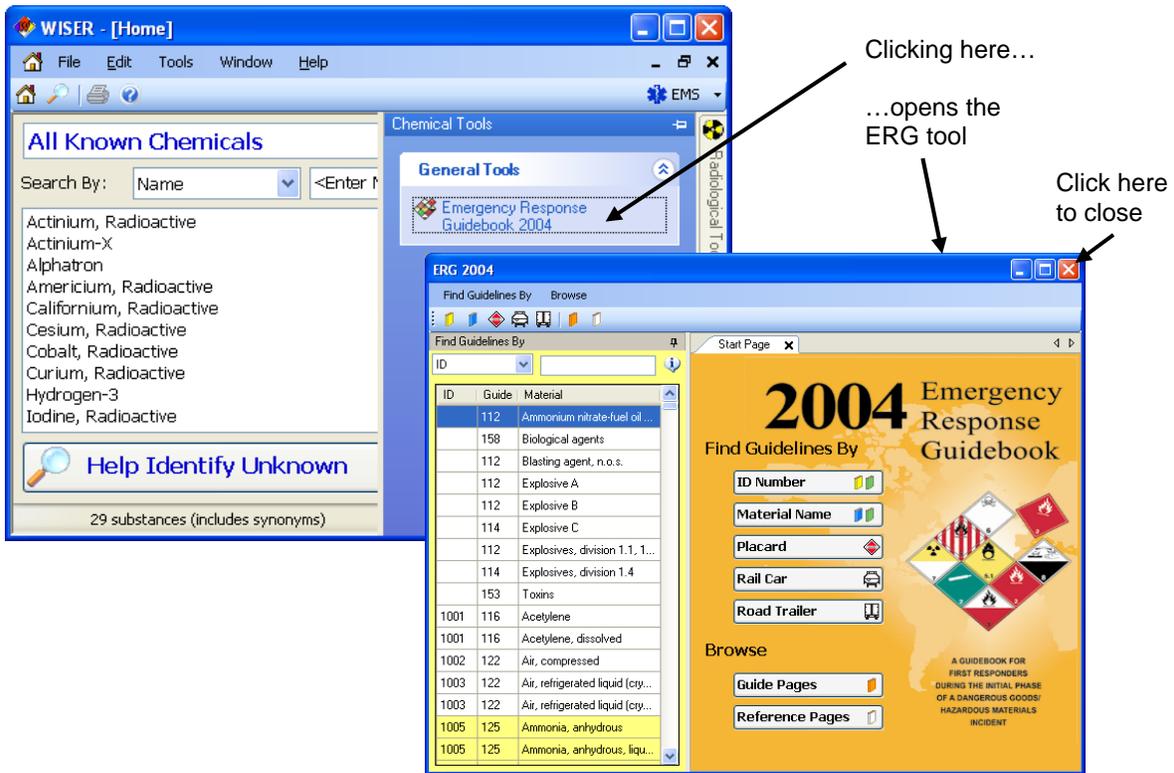
- General utilities with their own unique content and functionality.
- Algorithms – these are presented in an “algorithm viewer” which allows the user to respond to questions and walk through a path of an algorithm or flow chart in a “wizard-like” fashion.
- Reference Materials – these are instances of reference documentation, and are presented in a reference material viewer that provides for the browsing of all reference materials.

2.5.1. General Tools / Utilities

Individual tools are presented in a new window containing only the functionality of that that tool, and which can be interacted with separately from the WISER window. Examples of such tools include

- Dose Estimator - Onset of Vomiting (see the Radiological Tools)
- Radiation Unit Converter (see the Radiological Tools)
- Emergency Response Guidebook

For example, the following is the Emergency Response Guidebook (ERG) tool:



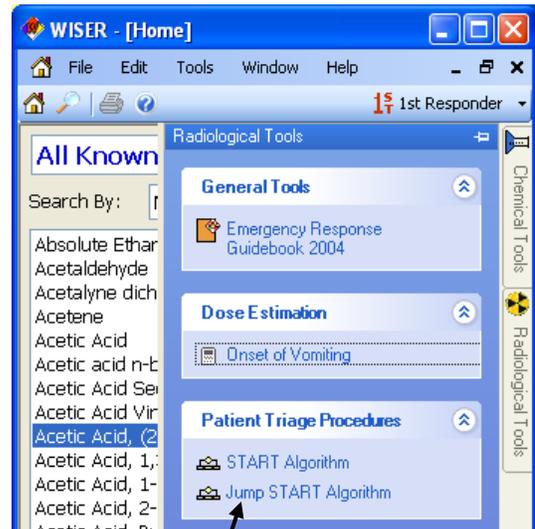
Click the top right corner (☒) of a tool window to close it.

2.5.2. Algorithms

An algorithm viewer is available for helping the user walk through processes that involve multiple steps and decision points, often presented as a “flow chart”. In the toolbox, these tools are displayed with a flow chart symbol next to them: . Examples include the START and JumpSTART triage algorithms. Clicking any of these opens an algorithm viewer window with the following components:

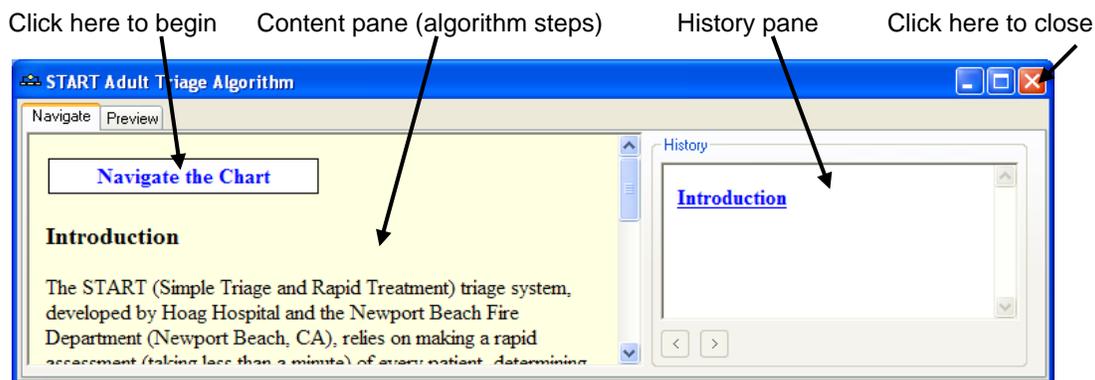
- “Navigate” tab: used to step through the algorithm
 - Left pane: content; displays the steps/questions of the algorithm one at a time
 - Right pane: history; shows each of the steps that have been completed and the responses that have been selected; can be used to navigate back to previous steps to review and/or change responses

- “Preview” tab: displays a diagram of the entire algorithm

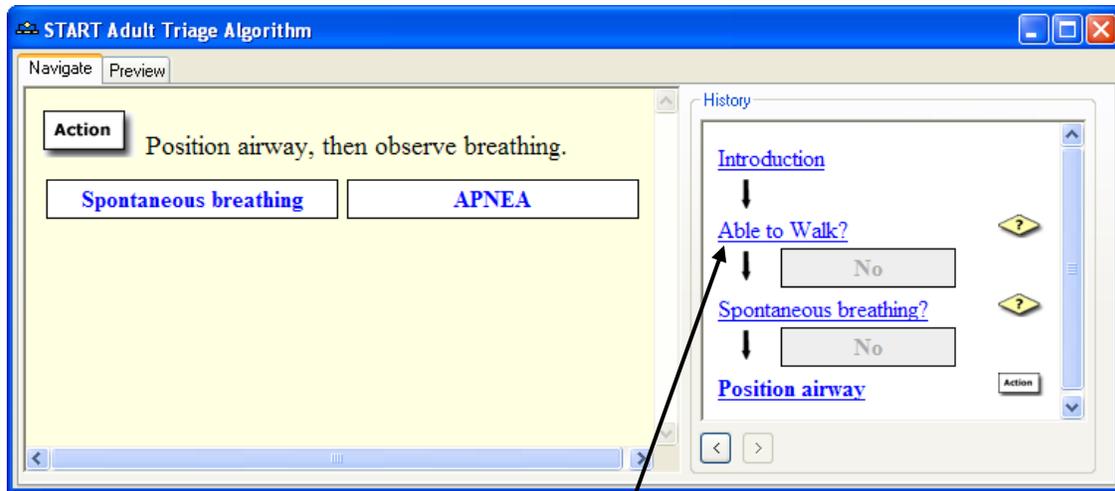


Click an algorithm option

The initial display for an algorithm consists of an introduction, a button to begin navigation of the algorithm, and a button that previews the entire algorithm (same as clicking on the preview tab). Press the navigate button, and respond to the questions presented until an endpoint is reached (the content pane will not contain any responses to select). Click the top right corner () of the algorithm viewer to close it.

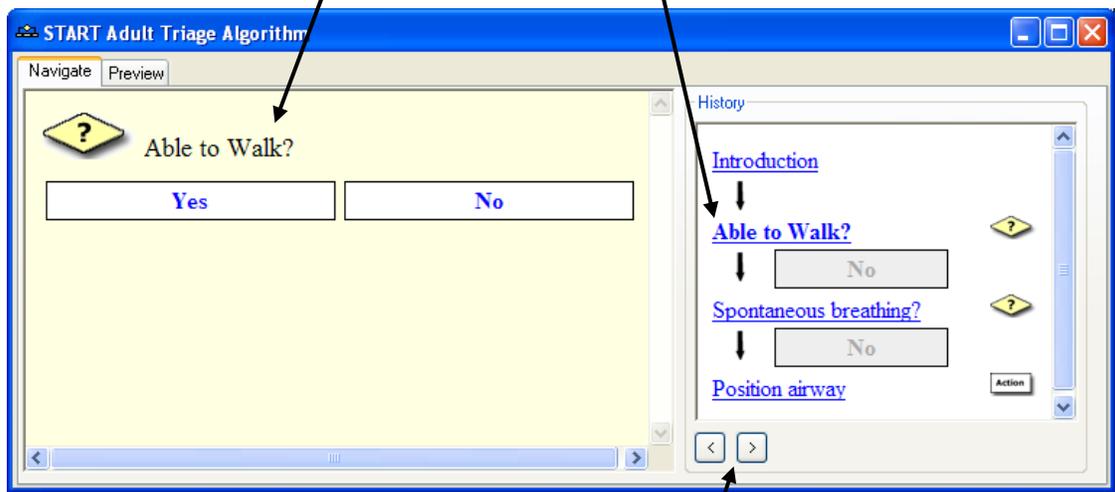


The left and right arrow keys at the bottom of the history pane provide for backing up and going forward through the steps already visited. To quickly return to a specific step, click that step in the list displayed in the history pane. Upon returning to a previous step, a different response can be chosen, and navigation resumes at that point of the algorithm. Boldface is used in the history pane to highlight the step that is currently being viewed in the left content pane.



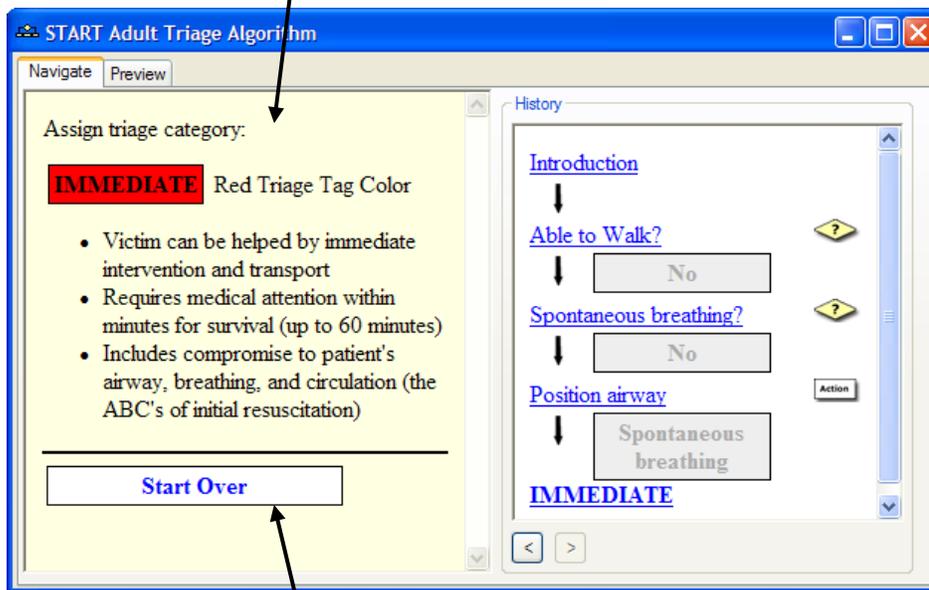
Click here to return to this step

Current step is highlighted in the history



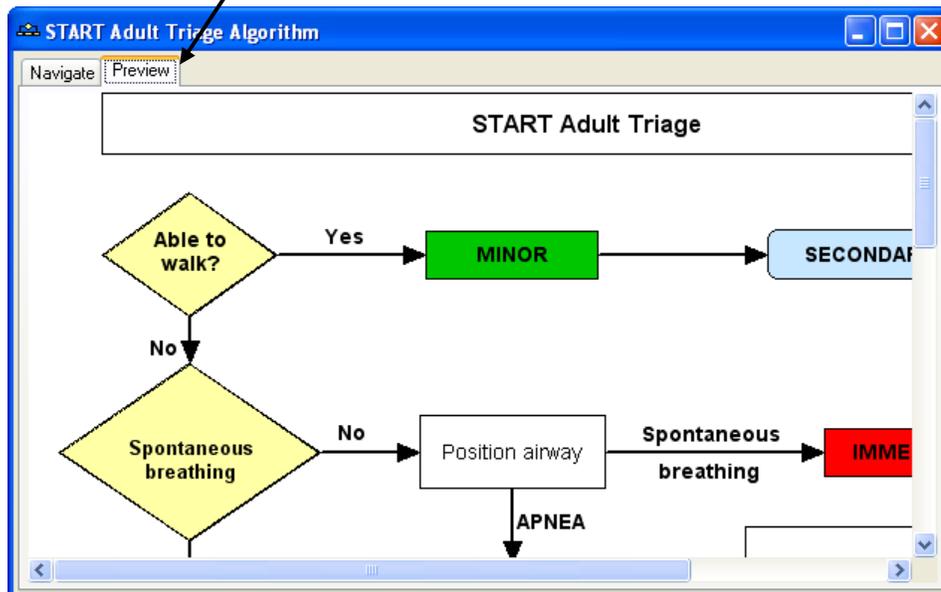
These buttons sequence through the history

Algorithm end point (no responses to choose from)



Reset the algorithm and start over

Preview tab displays the complete algorithm



2.5.3. Reference Materials

Reference material options in the toolbox are displayed with a document symbol next to them:

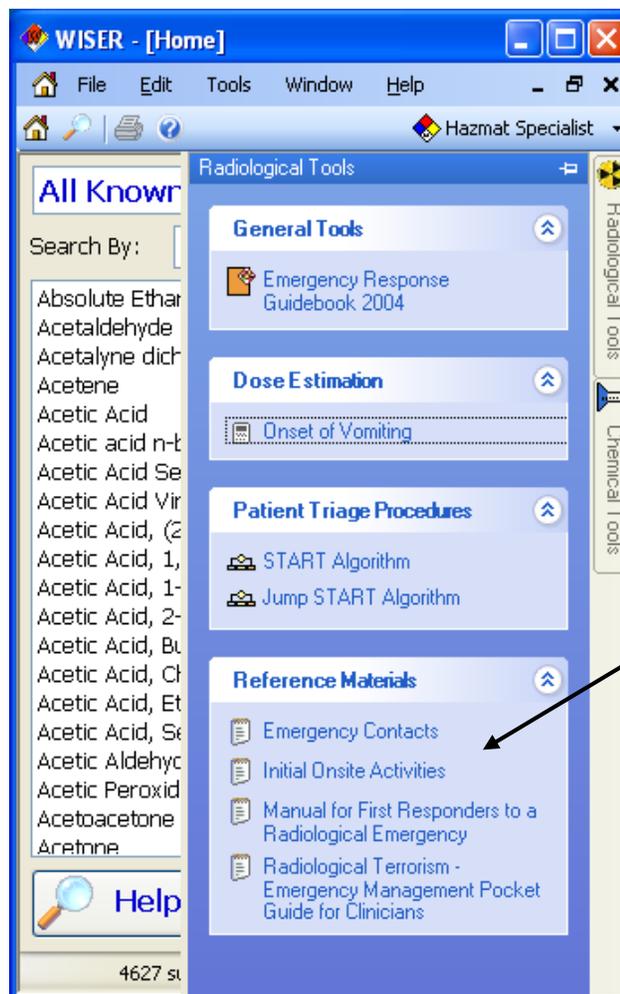
Selecting any of these opens a reference material viewer with two panes:

- The right pane displays the selected content.
- The left pane contains a “tree” representing the table of contents of all reference materials for a particular grouping, for example, all radiological reference materials. This tree can be used to navigate to and display the other documents included in the reference materials.

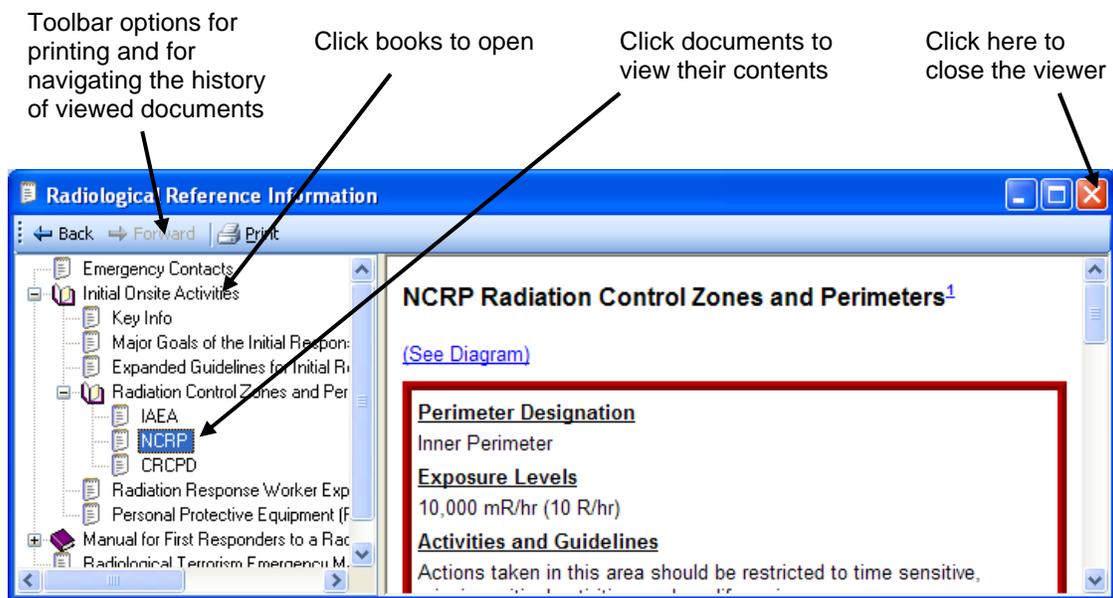
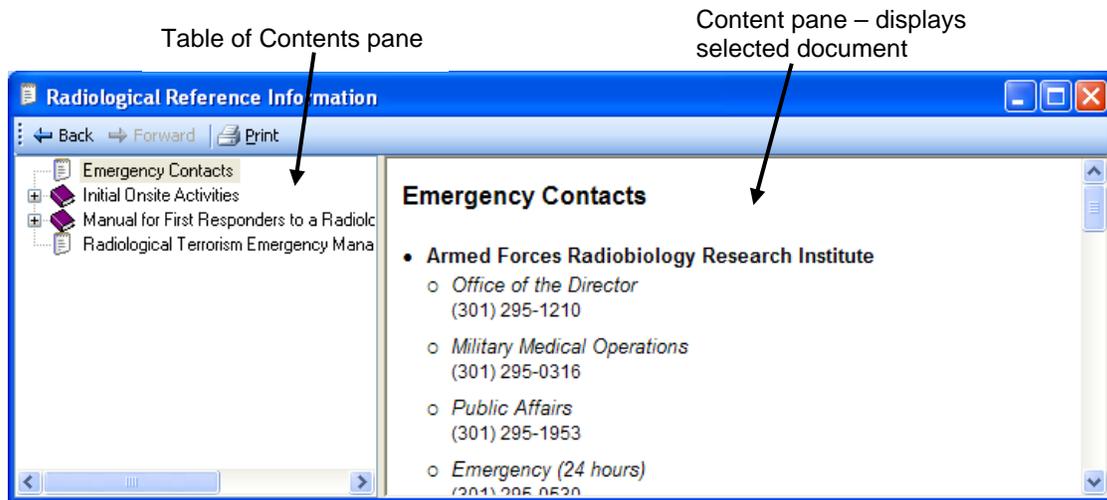
In the table of contents, the books represent groupings of related documents, and can be opened to view the individual documents that they contain. Individual documents

can be selected to view their content in the right pane. In addition, when clicking a book, the right pane displays all of the documents within that book, concatenated together into a single document.

A toolbar along the top of the reference material viewer allows for navigation back and forth through the history of previously viewed documents, as well as a print button that will print the contents of the right pane.



Click on a reference material option



2.6. Event Tracking

All user actions performed in WISER are tracked (logged) in time stamped entries in a text file. This information may be useful in recreating and reviewing WISER activity following an incident in which it was used.

This is done in a user-specific file called "wiser_tracking.txt", located in the folder:

C:\Documents and Settings\\Application Data\National Library of Medicine\WISER\

Its size is automatically limited to avoid unnecessary waste of storage space.

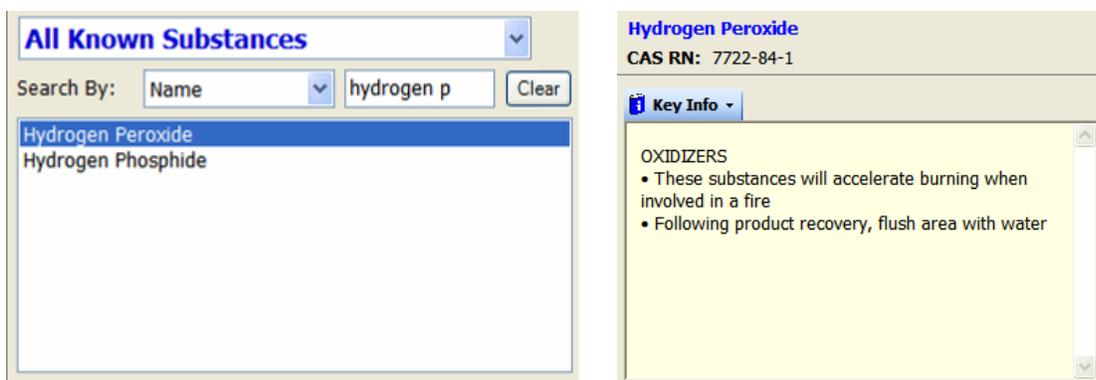
3. Tutorial

In this section, two scenarios are given as a tutorial for using WISER. In the first scenario, the substance is known; in the second, the substance is not known. WISER can be used in both of these scenarios to assist in responding to the incident.

Note: *The tutorial section contains references to substance counts which may change as updated versions of the WISER database are released. This would be caused by the addition of new substances or updates to the search data. The counts reflected in these sections should be used for example purposes only.*

3.1. Known Substance

In this scenario, you are the first responder at a scene. There is an overturned cargo tank with 'Hydrogen Peroxide' on the side; the papers on board and the driver verify that it is hydrogen peroxide. There is a small fire caused by the engine on the cargo tank. The driver of the truck has been splashed with the hydrogen peroxide and may have ingested some of it.



The immediate tasks are to clear out an appropriate area around the tanker truck, treat the driver, and correctly respond to the small fire. Using the WISER application, you enter an 'h' in the text field. The list of substances will scroll down to substances beginning with 'h'. Continue entering letters until hydrogen peroxide is visible in the list (or use the scroll bar to advance the rest of the way).

Double-click on hydrogen peroxide (above figure). This will bring up the Data Window for hydrogen peroxide, showing the Key Info.

To determine the appropriate area to clear out, select the Protective Distance option in the data menu, as shown in the following figure. This brings up the Evacuation distance information from the DOT Emergency Response Guidebook (ERG). (The ERG is also accessible in its entirety by selecting the Hazmat submenu.)

Click either item to bring up the data menu

Click here

The sequence shows three screenshots of the WISER interface for Hydrogen Peroxide (CAS RN: 7722-84-1). The first screenshot shows the main application window with the 'Key Info' menu open. The second screenshot shows the 'Protective Distance' menu item highlighted. The third screenshot shows the 'Protective Distance' data view, which includes links to ERG Guide 140 and ERG Guide 143, and a 'PUBLIC SAFETY' section with text: 'As an immediate precautionary measure, isolate spill or leak area in all directions for at least 50'.

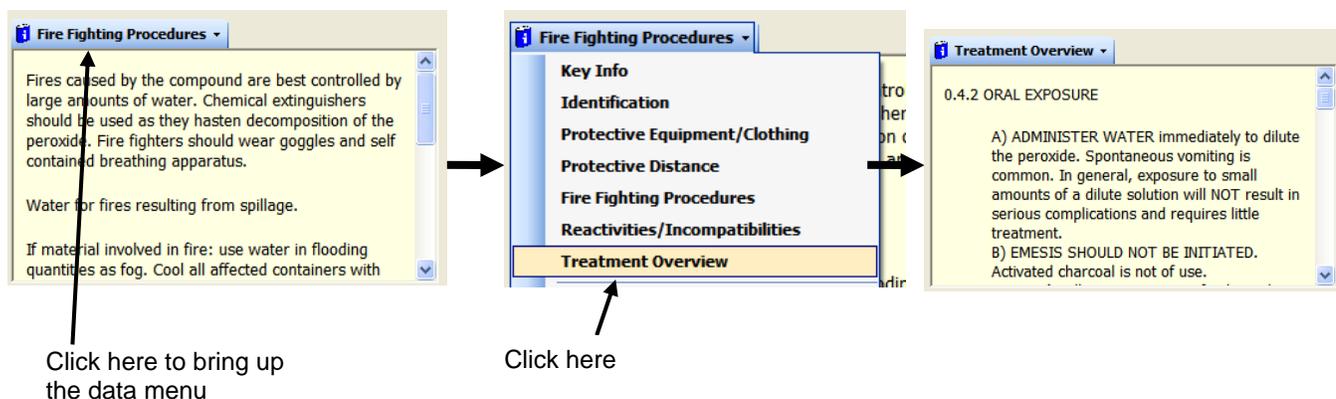
For information on the correct response to the fire, select the Fire Procedures hot link in the data menu, as shown below. (The Fire Procedures is also accessible from the Hazmat submenu).

Click here to bring up the data menu

Click here

The sequence shows three screenshots of the WISER interface. The first screenshot shows the 'Protective Distance' data view with the 'PUBLIC SAFETY' section. The second screenshot shows the 'Fire Fighting Procedures' menu item highlighted in the data menu. The third screenshot shows the 'Fire Fighting Procedures' data view, which includes text: 'Fires caused by the compound are best controlled by large amounts of water. Chemical extinguishers should be used as they hasten decomposition of the peroxide. Fire fighters should wear goggles and self contained breathing apparatus. Water for fires resulting from spillage. If material involved in fire: use water in flooding quantities as fog. Cool all affected containers with'.

Finally, treatment of the driver can be determined by selecting the Treatment hot link, as shown below. (The treatment data is also accessible from the Medical submenu).



If more in-depth information is required, such as physical properties, it can be found by selecting the category of interest in the data menu, and then the desired data element from the resulting submenu. For example, to view information about decomposition, you select the category 'Properties' from the data menu, and then 'Decomposition' from the resulting submenu.

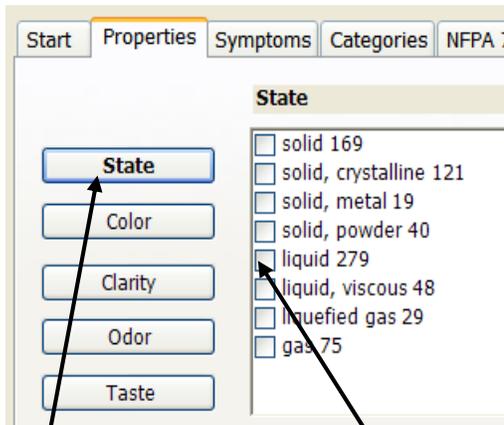
3.2. Unknown Chemical Substance

In this scenario, you are the Hazardous Materials Specialist responding to an incident at a warehouse. The warehouse has been cleared and the situation has been stabilized. Your primary task is to identify the substance and provide information and recommendations to the Incident Commander.

The substance in question has been leaking from an unmarked barrel. It has been described as a colorless liquid with an alcohol smell. The workers from the warehouse are showing the following symptoms: nausea, dizziness, headache, eye irritation, and low body temperature.

Using WISER in this situation, you select the Help Identify button on the Main window. If there is an existing search in progress, you should select New Search to save the search and clear out the symptoms, properties, and NFPA 704 selections.

To enter the properties of the substance, select the Properties tab. Start property selection by selecting 'State' to bring up the possible values of physical state, and selecting 'liquid'. Liquid is now shown in the selected list and the number of matching substances has been reduced to 279 of the original 414.



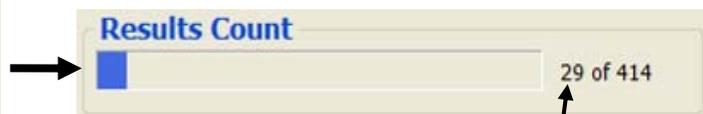
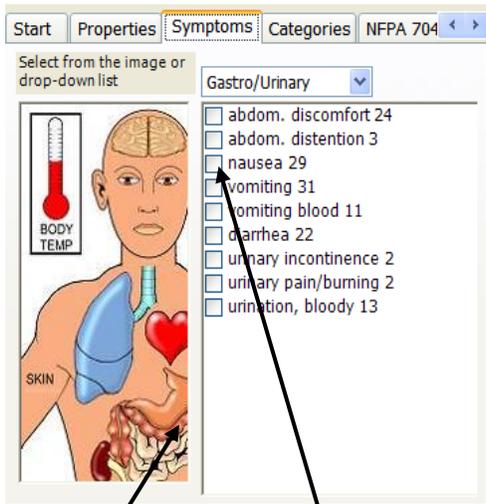
Matching substances reduces to 279

Click here to display the list of states and then click liquid in the list.

Then, following the same process, select colorless from the Color property and select alcohol-like from the Odor property.

The result of using the properties liquid, colorless, and alcohol-like odor is that the original list of 414 substances has been reduced to 32.

Continue with symptoms selection by selecting the Symptoms tab. The symptoms (nausea, dizziness, headache, eye irritation, and low body temperature) are selected by selecting the body part that shows the symptom. For nausea, click on the stomach.



Matching substances reduces to 29

Click here to display the list of Gastro/Urinary symptoms and then click nausea in the list.

For dizziness and headache, click on the brain and then select the corresponding values in the list. The symptoms of eye irritation and low body temperature are selected similarly. For eye irritation, click on the

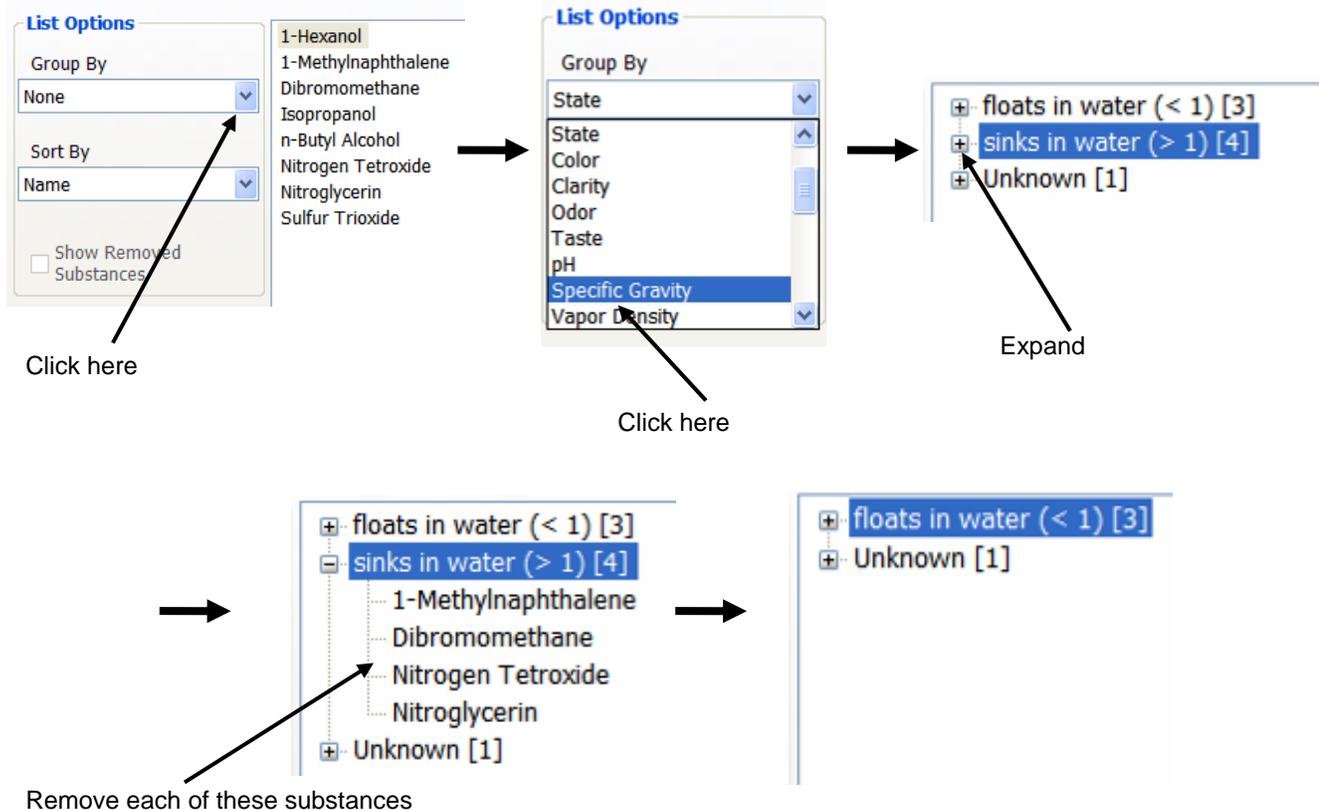
eyes in the image of the human body. Then, select irritation. For low body temperature, click on the image of the thermometer and then select low body temperature. To view the results of the search, select the Results tab shown below.



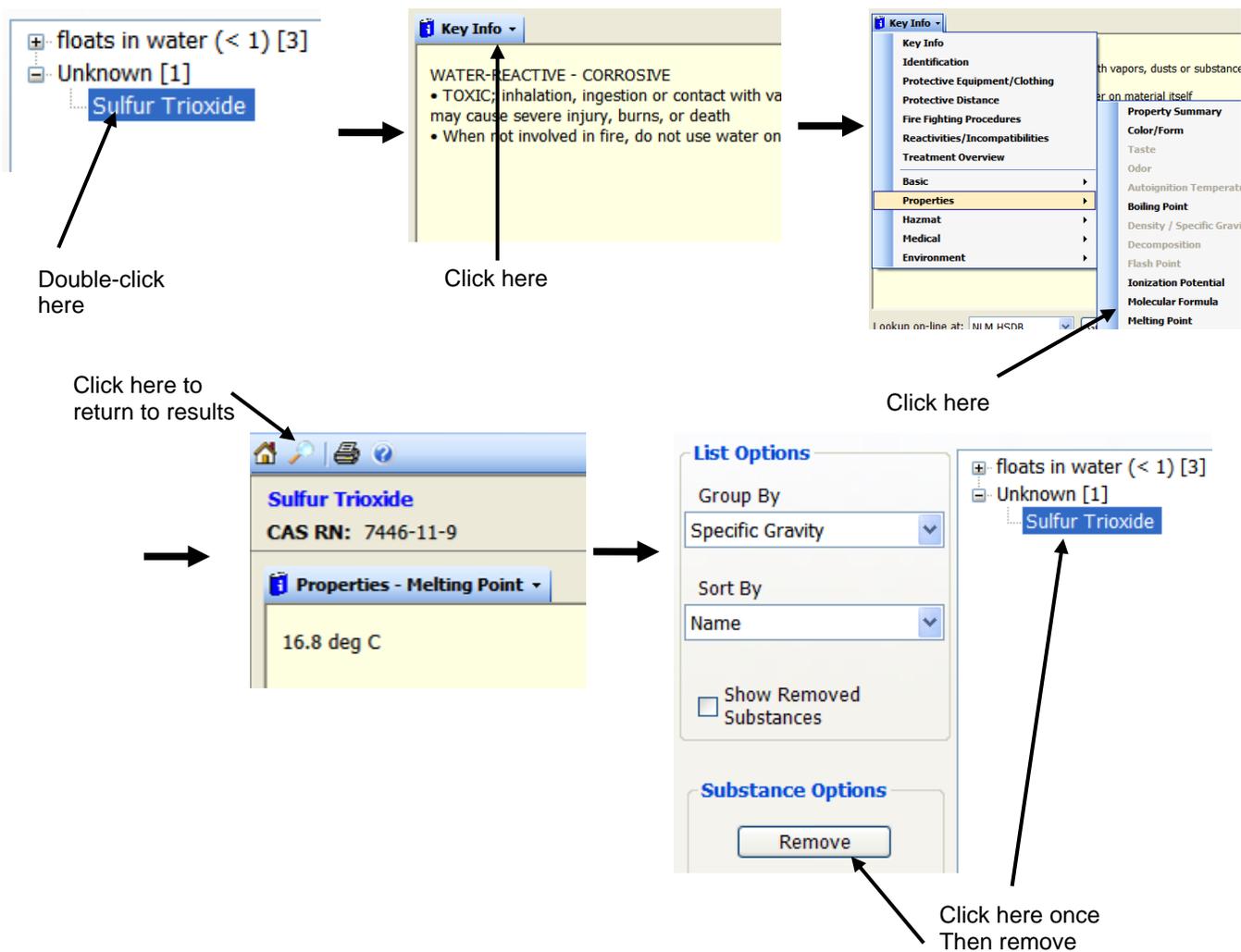
Click the results tab to view the substances

The search to this point has resulted in 8 substances that match the symptoms and properties selected. To determine the correct substance, the Results page allows the user to group and sort the substance in different ways, remove substances that are known to be incorrect, and go to the Data Window for the substances.

In this tutorial, the user groups by various symptoms and properties until getting to Specific Gravity and that information is used to narrow down the substances even more. Here, the user clicks on the Group-by drop-down list, and selects Specific Gravity. Based on the results of the grouping, the user tests the substance and observes that the substance is not soluble and floats on water. Thus, the "sinks in water" substances can be removed. As demonstrated below, this is done by expanding the "sinks in water" grouping, and then selecting each substance and clicking the Remove button.



The remaining substances need to be examined in more detail to determine the correct substance. First, examine those under the “Unknown” grouping, indicating that WISER does not have specific gravity data for them. Selecting Sulfur Trioxide to view the Data Window, the Key Info indicates that it is water-reactive. Further investigation indicates that the melting point is 16.8° C. So, at the current temperature, it should be a solid. It is thus likely that this substance can be removed.



The final results of the search are 1-Hexanol, Isopropanol and n-Butyl Alcohol. Further investigation of each, using the Data Window, shows that these hydrocarbons have very similar characteristics and procedures. For example, the Emergency Response Guidelines for all three are the same.



4. About NLM

The National Library of Medicine (NLM) is the world's largest medical library. The Specialized Information Services (SIS) Division of NLM is responsible for information coverage and services for several areas, including environmental health and toxicology, AIDS, and directories to other information resources concerned with health and biomedicine. SIS maintains the Hazardous Substance Data Bank (HSDB), covering over 4700 substances, their toxicology, emergency handling procedures, and environmental fate. The NLM is part of the National Institutes of Health, an agency of the U.S. Department of Health and Human Services.