U.S. Department of Labor
Employment Standards Administration
Office of Workers' Compensation Programs

Energy Employee Occupational Illness Compensation Program

Site Exposure Matrices Website User Reference Guide

Version 2, DRAFT, February 14, 2006

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1. INTRODUCTION

In October 2004, Congress amended the EEOICPA with Part E which provides compensation and medical benefits for DOE contractor and subcontractor employees whose illnesses were caused by exposure to toxic substances while working at a Department of Energy (DOE) facility, uranium mine, uranium mill, or performing uranium ore transport. The Site Exposure Matrices (SEM) website contains toxic substance exposure information in a relational database structure for use by DOL Claims Examiners adjudicating Part E claims.

Using information made available by the DOE and from publicly available resources, the SEM identifies the toxic substances that were commonly used in each DOE facility, uranium mine, or uranium mill. The SEM identifies the work groups that used each substance, the buildings where they were used, and incidents involving the substance.

The SEM contains two general categories of information: chemical profiles and site-specific information. For a selected toxic substance, its chemical profile includes the Chemical Abstracts Service (CAS) number that identifies the chemical, aliases for the substance name, chemical and physical properties, and health hazard ratings assigned by sources routinely used by industrial hygienists for evaluation of workplace substances (see Section 8.2, page 26 for details). The SEM includes health effects as defined by the National Institutes of Health Haz-Map database. For a specific toxic substance, only those occupational diseases that are recognized by the NIH are included in Haz-Map. For the selected DOE or mining site, the SEM provides information about the work processes performed at the site, where on the site those processes were performed, the work groups that performed the processes, the toxic substances used and when, and site-specific aliases used for toxic substances, buildings, and work groups.

When approved by the DOL National Office (NO), the SEM Site Administrator grants user access. Claims Examiners should contact their supervisor for the appropriate procedures to obtain SEM access.

The SEM database is maintained by Steve Rudy and Mark Carey, Site Administrators. If you need assistance using the database or accessing the site once you have been authorized by the DOL NO, please contact a website administrator at 614-638-8159 or dol-sem@earthlink.net.

The DOL NO will continually improve the SEM database and its usefulness in claims adjudication. If you have comments or suggestions for improving the database, please send them to the designated SEM project manager in the Branch of Policy, Regulation, and Procedures.

The following pages of the Users Guide describe how the SEM can be used to assist Claims Examiners with claims adjudication, including the following for each DOE facility, uranium

mine, and uranium mill:

- Identifying the toxic substances that may cause a disease or health effect.
- Identifying the toxic substances present at the facility, where those substances were used, and by which labor groups.
- Identifying when the toxic substance was used at the site, and in which processes.
- Defining the DOE documents and other sources of information used to develop the matrix.

The information in the SEM has been taken from credible sources including the following:

- DOE and publicly available documents from sources such as NIOSH that describe each site, the work performed, and toxic substances used.
- NIH Haz-Map7 (Copyright 8 2000-2002), an occupational toxicology database designed to link toxic substances to occupational diseases. Haz-Map uses information from textbooks, journal articles, and electronic databases (Hazardous Substances Data Bank, Agency for Toxic Substances and Disease Registry Toxicological Profiles, ACGIH Documentation of Threshold Limit Values, NIOSH Technical Information Center, and others) as the source of its information on 1237 chemical and biological agents. For ease of use, the original list of 189 Haz-Map diseases was reviewed and those diseases not applicable to DOE or mining site activities were not included in SEM. There is a link on the SEM chemical profile page for each toxic substance in SEM that is covered by Haz-Map. That link takes the Claims Examiner to the full text of Haz-Map information on the substance.
- NIOSH Occupational Health Guidelines and ATSDR Tox Profiles are being added to SEM to identify additional toxic substance links to occupational diseases.
- SAX's Dangerous Properties of Industrial Materials, Eleventh Edition, 2005, Richard J. Lewis, Sr., ISBN: 0-471-69075-9. *SAX's Dangerous Properties of Industrial Materials* is a source of information on the hazardous potential of approximately 26,000 toxic substances used in commerce. For each toxic substance, it includes the hazard rating, entry name, CAS number, DOT number, molecular formula, line structural formula, a description of the material and physical properties of the chemical, synonyms, and toxicology data with references for reports of primary skin and eye irritation, mutation, reproductive, carcinogenic, and acute toxic dose data. Its health effects information is not used by the EEOICPA for identifying a cause-effect relationship between a toxic substance and an occupational disease. However, a Claims Examiner may find the

supplemental information provided by SAX helpful to fully understanding a toxic substance. There is a link on the SEM chemical profile page for each toxic substance in SEM that is covered by SAX. That link takes the Claims Examiner to the full text of SAX information on the substance.

- Material Safety Data Sheets (MSDS) produced by various manufacturers are used to supplement the descriptive information provided by other sources. OSHA's Hazard Communication standard requires chemical manufacturers to evaluate the hazards of chemicals they produce and to prepare MSDSs to convey those hazards to users. SEM includes MSDS data as another source of information for the Claims Examiner. MSDS health effects information is not used by the EEOICPA for identifying a cause-effect relationship between a toxic substance and an occupational disease.

2. CONFIGURING YOUR BROWSER

Open your browser.

Make sure that "cookies," "active scripting" (JavaScript) and "pop-ups" are enabled.

For Microsoft Internet Explorer, these settings can be adjusted via the *Tools | Internet Options* menu command, which opens the *Internet Options* dialog.

Browser Version	Enabling cookies	Enabling Javascript	Enabling Pop-ups
Internet Explorer 6	• Select the *Privacy* tab • Click the *Sites* button to open the *Per Site Privacy Actions* dialog • Type ***.dol-sem.com** in the *Address of web site* field • Click the *Allow* button • Click the *OK* button to close the *Per Site Privacy Actions* dialog	• Select the *Security* tab • Click the *Custom Level* button • Scroll to the *Scripting* section of the *Settings* list • Select the **Enable** option for the *Active Scripting* setting	• Select the *Privacy* tab • Click the *Settings* button in the *Pop-up Blocker* area of the dialog • Type ***.dol-sem.com** in the *Address of web site to allow* field • Click the *Add* button • Click the *OK* button to close the *Pop-up Blocker Settings* dialog.

After verifying or adjusting the settings, click the *OK* button to close the *Internet Options* dialog.

If you have trouble downloading the help file, and are using Microsoft Internet Explorer, then the following setting adjustment may be pertinent:

> The December 14, 2005 server patch from Microsoft created a bug in the Internet Explorer browser which may prevent downloading files from a secure site such as dol-sem.com. To get around this temporary bug:
>
> - open Internet Explorer
> - from the menu, select Tools/Internet Options
> - in the settings dialog, click the Advanced tab
> - in the Settings list, near the bottom, CHECK the "Do not save encrypted pages to disk" option.
> - click the OK button.

3. LOCATING THE WEBSITE

In the browser's Address line, type

https://dol-sem.com

It is important that you type HTTPS, not HTTP, since this website uses secure data transmission.

Your browser may ask you to confirm that you want to proceed in a secure mode. If so, click **OK**.

Your browser may ask you to verify use of the website's security certificate. If so, click **Yes**.

The *Login* page should then be displayed (Figure 1).

4. LOGGING IN

On the *Login* page (Figure 1), type your **username** and **password** in the fields provided.

NOTE: To obtain access, contact your supervisor. Once the National Office authorizes access, the Web Site Administrator will contact you with your new username and a temporary password. The Web Site Administrator, Steve Rudy or Mark Carey, can be contacted at 614-638-8159 or dol-sem@earthlink.net.

Click the **Login** button. Normally (if you are not required to change your password; see Section 5) the *Disclaimer Acknowledgment* page will then be displayed (see Section 6).

If you mistype either your username or password 5 times in 5 minutes, then you will be unable to login or access the website for a period of 30 minutes.

If you have forgotten your username and/or password, contact the Web Site Administrator as identified above.

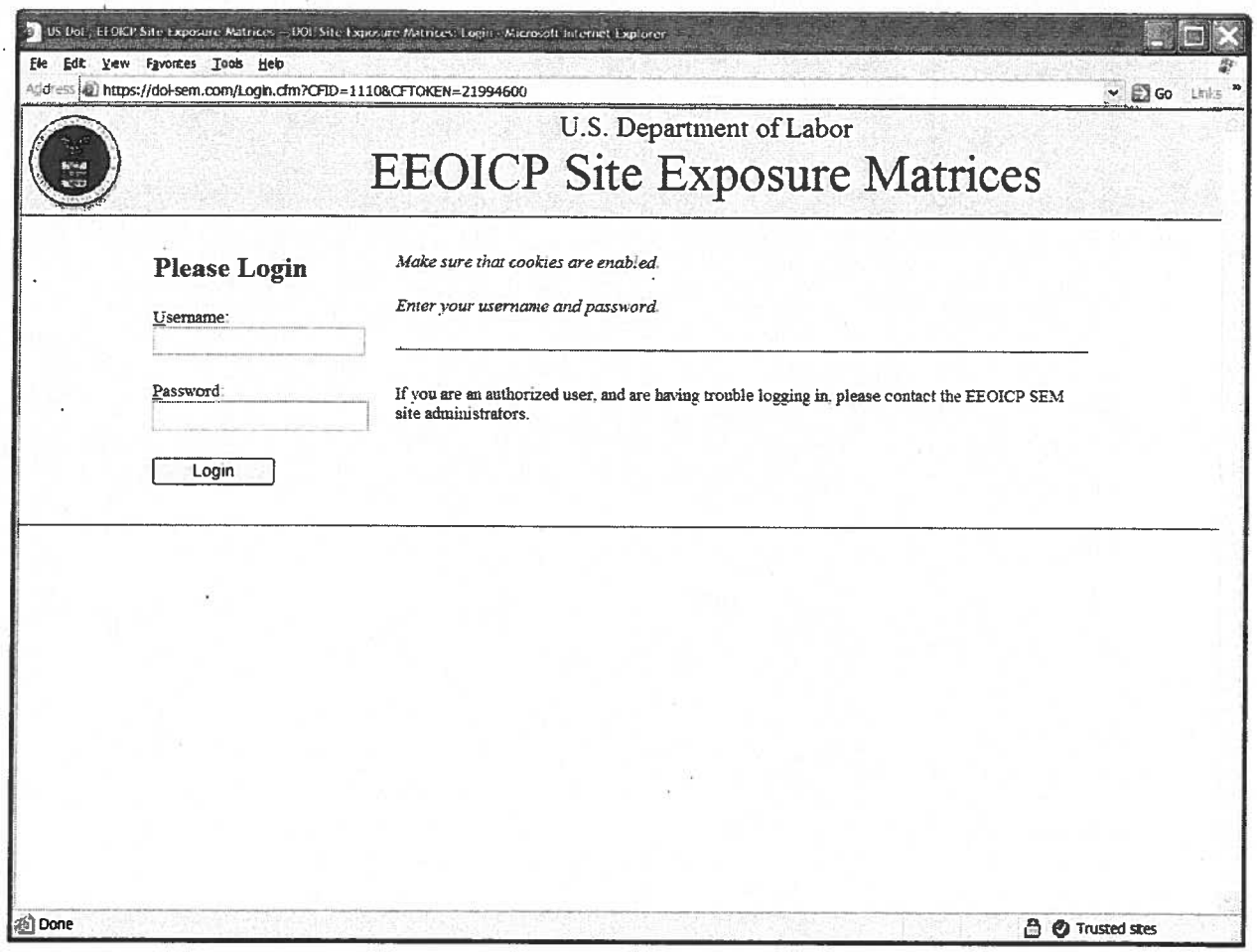

Figure 1: Login Page

5. CHANGING YOUR PASSWORD

The first time you log in, you will be required to change your password. You will also be required to change your password upon logging in if: (a) your password is more than three months old, or (b) your password does not conform the following complexity criteria. Passwords must be at least 9 characters in length, and must contain a combination of uppercase, lowercase, numeric and punctuation characters. They should also avoid common words or phrases.

For example, the password "Department1" contains upper and lower case letters, as well as a numeric character (3 of the 4 character categories), and has sufficient length. Yet it is based on a common word, and so is not acceptable.

Otherwise, you may change your password at any time by clicking the *Change Password* link in the upper right corner of the web page.

A form is displayed (Figure 2) in which you must re-enter your current password, and enter your new password twice. Then click the *Change Password* button.

A confirmation page will be displayed which contains a link back to the *home* page.

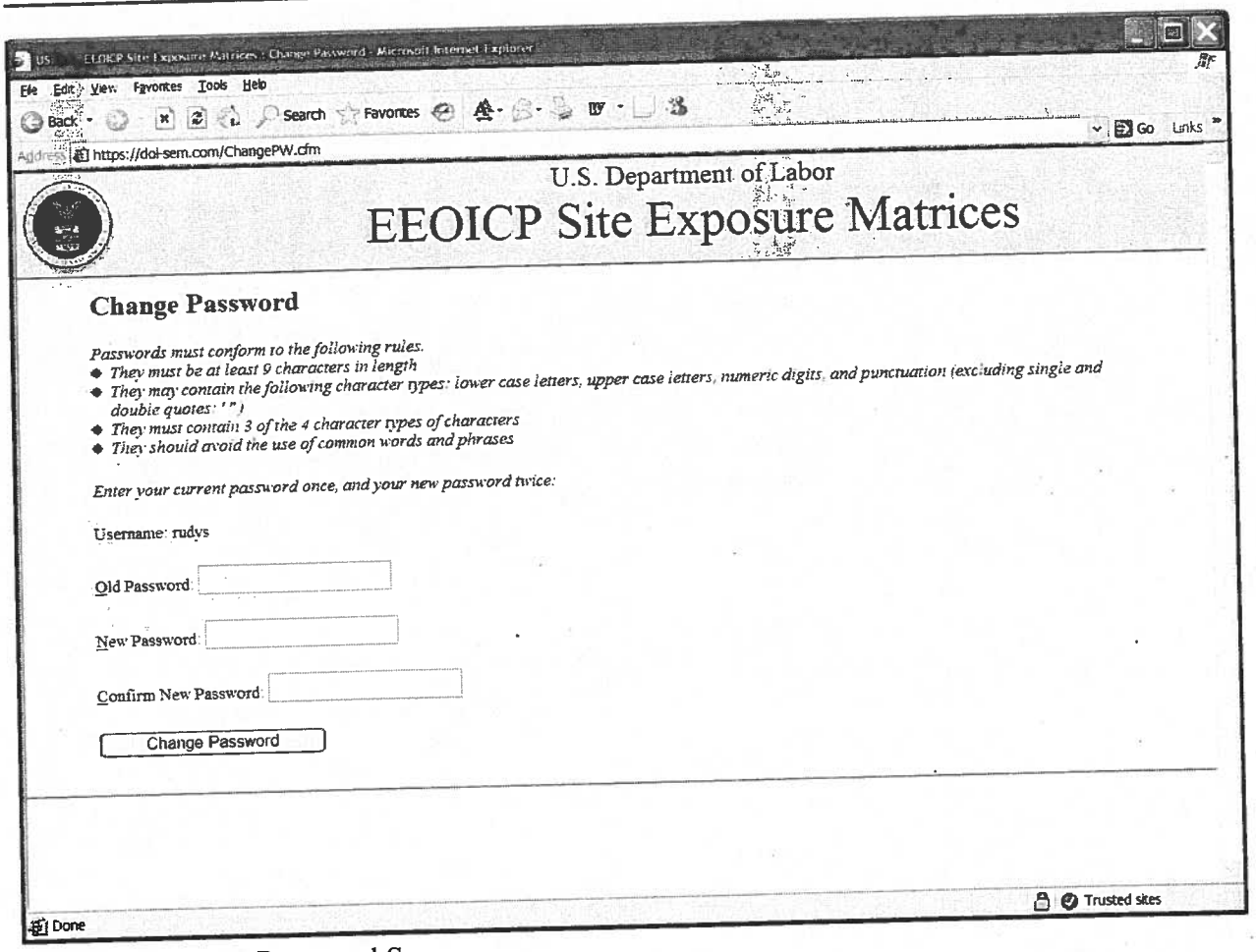

Figure 2: Change Password Screen

6. ACKNOWLEDGING THE DISCLAIMER

After logging in, you will be required to acknowledge a disclaimer (Figure 3). The Disclaimer informs the SEM user of its limitations in regards to the data completeness. Site information in SEM reflects the compilation of data from various sources. The completeness of site information is dependent on the accuracy and availability of those sources to the developers of the database. Like all databases, the SEM is not complete. As new information is learned about a site, it is added to the database. This process is expected to continue as new information is obtained. As a result, the Claims Examiner must understand that the SEM data has limitations. Later in this Guide, directions are provided to help the Claims Examiner obtain assistance when a claimed exposure is not consistent with information in the database.

To properly adjudicate a claim will require use of information beyond that presented in the SEM. Refer to Chapter E-500 for guidance in assessing exposure and causation.

The absence of a toxic substance, work process or work group in the SEM database does not necessarily mean that the potential for exposure did not exist. Instead, it may indicate that information about that potential exposure was not available during SEM development. If you find that a claimed work process, labor group, or toxic substance is not covered in the SEM, then refer to Bulletin X-000000.

After reading the disclaimer, click the *acknowledge disclaimer* checkbox, then click the *Submit Acknowledgment* button. The *Main Menu* will then be displayed (Figure 4).

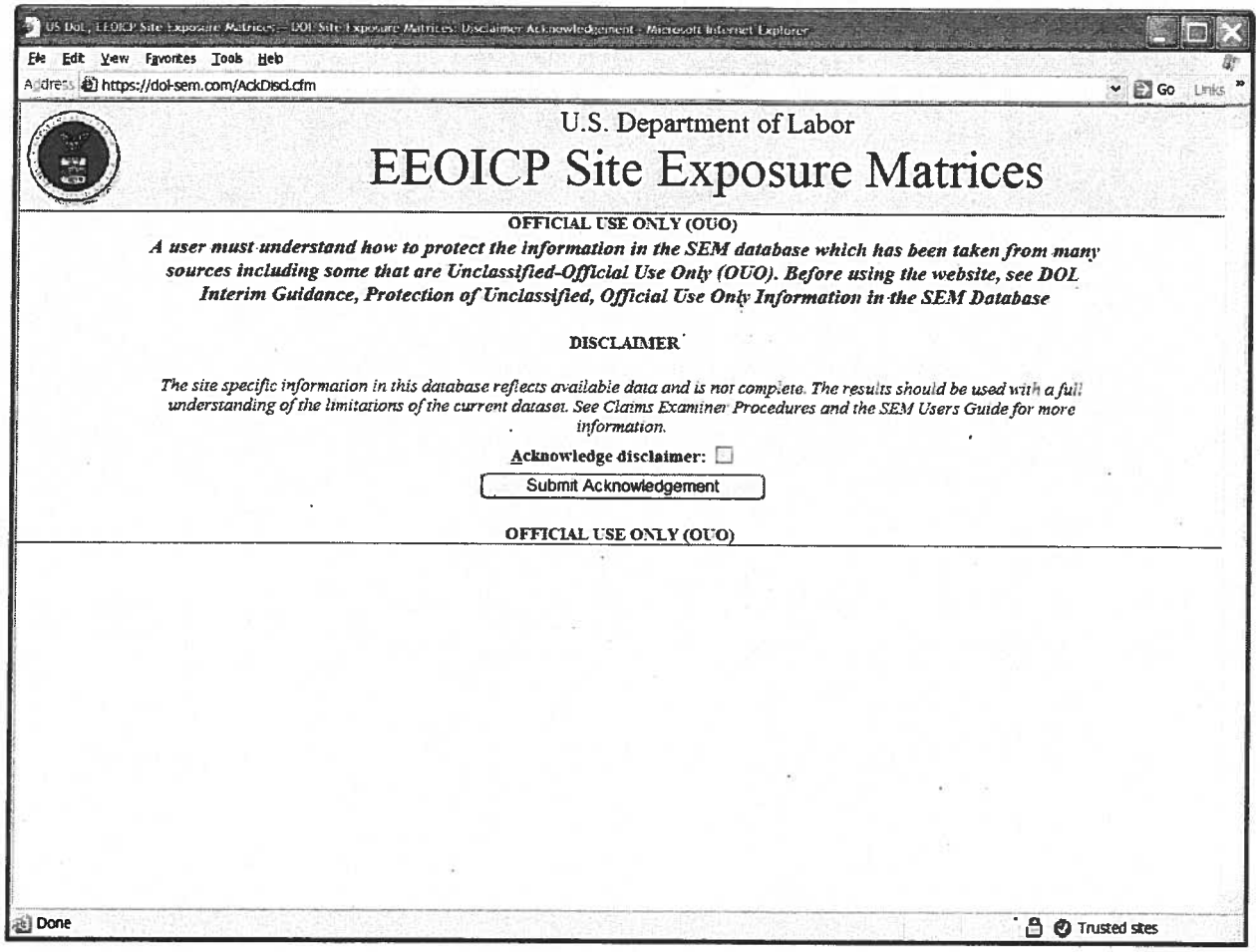

Figure 3: Disclaimer Acknowledgment Screen

7. MAIN MENU

The Main Menu presents links to available search options in long form. Links to each search option are also presented in the horizontal menu at the bottom of the page.

The website presents two types of data: (a) toxic-substance-specific; and (b) site-specific. Links to the toxic-substance information is displayed upon logging in and its access is described in Section 7.1 below. Accessing site-specific information about a DOE facility or a uranium mine, mill or transport is described in Section 7.2.

7.1 Searches of Universal Information

Universal (non-site-specific) searches include those associated with toxic substances, and those associated with source documents in the project repository.

Toxic substance-related searches available are:

Toxic substances

- *Toxic substance information.* Use this search if you know the toxic substance involved. Selecting this link opens the Toxic Substance focus page (see Section 8 for addition information on Focus Pages). A form control is displayed by which the user finds and selects the substance of interest. When a substance is selected, the page provides a "chemical profile" of the substance which includes: a description of the chemical, its properties, and its health effects. A list of sources from which the profile information was obtained, and the date on which the profile was last modified is also provided.
- *Toxic substance by alias or property.* Use this search to find a toxic substance using an unofficial name, or by a physical or chemical property. Using this link allows the user to find the identity of toxic substances by keying in part or all of the name, unofficial name (alias), or description of a toxic substance using a physical or chemical property. The result may be no match, one match, or multiple matches. For example, searching for "yellow" will return a list which includes uranium dioxide, and searching for "yellowcake" will return a shorter list which still includes uranium dioxide. If the search returns a substance, then clicking on the magnifying glass (🔍) icon to the left of the substance name will open the "chemical profile" described in *Toxic substance information* above.
- *Toxic substance by chemical category.* Use this search to find a toxic substance by category, e.g., gases or metals. If the claimant is not specific about the substance to which he/she was exposed, but describes it in general terms, this link will allow the Claims Examiner to review a list of potential substances to which the claimant

may have been exposed. After selecting a chemical category from the drop down menu (gases, metals, acids, etc.), a listing of all toxic substances within that category at the site is displayed. Clicking on the magnifying glass (🔍) icon to the left of a substance name will open the same chemical profile described in *Toxic substance information* above.

Health effects

- *Toxic substance by health effect.* Use this search if you know the claimed health effect or disease. Using this link will open a page which allows the Claims Examiner to identify the toxic substances at the selected site that might have caused a health effect or disease. Select the health effect or disease from the drop-down menu. The page will display the toxic substances that could cause the health effect or disease. Clicking on the magnifying glass (🔍) icon to the left of the substance name will open the same chemical profile described in *Toxic substance information* above.
- *Toxic substance by disease or health effect alias.* Use this search if you cannot find the claimed disease in the formal list, but you know an unofficial or partial name of a disease or condition. Using this link opens a page which allows the user to find toxic substances by keying in all or a portion of the formal name of a health effect or disease. The page lists toxic substances that could have caused one or more of the health effects or diseases which contain the search text in their formal names. For example, searching for "liver" returns *arsenic* and *arsenic acid*, as known chemicals causing an effect to the liver or Hemangiosarcoma of the liver. Clicking on the magnifying glass (🔍) icon to the left of the substance name will open the same chemical profile described in *Toxic substance information* above.
- *Disease or health effect by alias.* Use this search if you know the organ affected by disease. Using this link opens a page which allows the user to find health effects or diseases by keying in all or a portion of the formal name of a health effect or disease. The SEM provides a list of health effects or diseases, which contain the search text in their formal names. For example, searching for "liver" returns *Hemangiosarcoma of the liver*. Clicking on the magnifying glass (🔍) icon to the left of the health effect or disease will initiate the search described in *Toxic substance by health effect* above.

The SEM source document repository (library) can be searched

- *Document by document number or title text.* Using this link opens a page which lists all documents in the SEM source document repository, sorted by title. The page includes a form for filtering (searching) the source document listings by relevant site, and/or by matching a text entry to the document number or title. The

form also includes options for sorting the listed documents by document number or logged date.

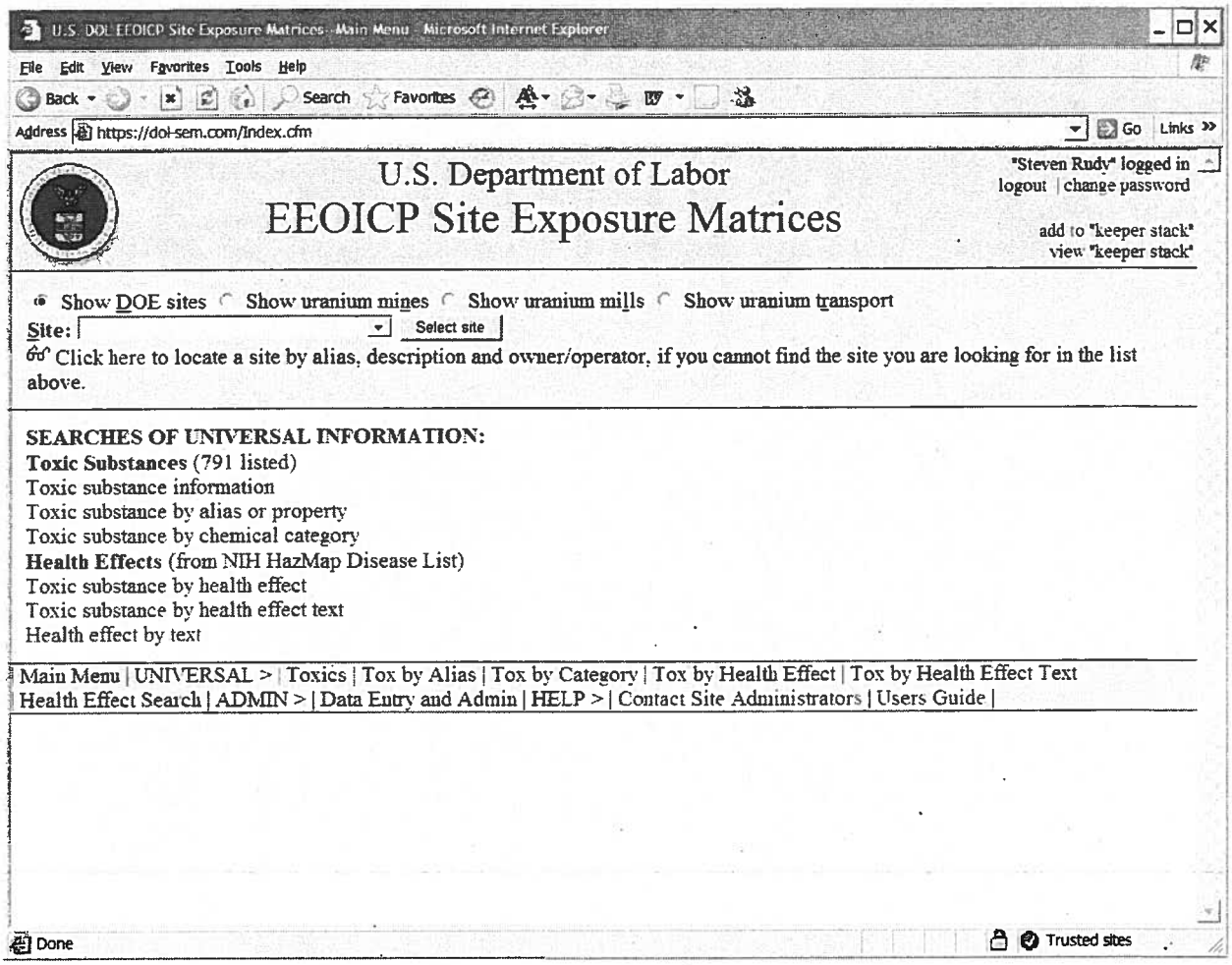

Figure 4: Main Menu

7.2 Site-Specific Searches

Most uses of the SEM will involve a specific site. In this manual, the term site is used to refer generally to: a DOE facility; a uranium mine; a uranium mill; or a uranium transport operation. The following section informs the Claims Examiner how to use SEM, starting from the Main Menu, to conduct various searches related to a specific site.

If you want to focus on a specific site, then you must first indicate the type of "site" (DOE facility, uranium mine, uranium mill, or uranium transport) using the type selection buttons on the main menu. You then must indicate the particular site by selecting it in the **Site** selector and clicking the **Select Site** button. The Main Menu will be expanded to provide links to site-

specific searches (Figure 5). Due to the large number of uranium mills and the even larger number of uranium mines, the main menu requires additional selections before selecting a particular mine or mill, as follows:

- Uranium mines – a state must be selected; a county must be selected; the mine can then be selected from a list of mines in the selected state and county

- Uranium mills – a state must be selected; the mill can then be selected from a list of mills in the selected state.

If a site (DOE site, uranium mine, mill or transport) has been selected, then all chemical information is filtered such that only chemical information related to the selected site is displayed, and SEM source document listings only include those documents pertinent to the site.

To capture trade-specific exposure potential in DOE sites, a virtual "Construction" site has been established, along with a list of construction trades (labor categories) and SEM entries relating the labor categories to the chemicals to which a claimant may have been exposed while on the job. See Section 9 for an explanation of this site.

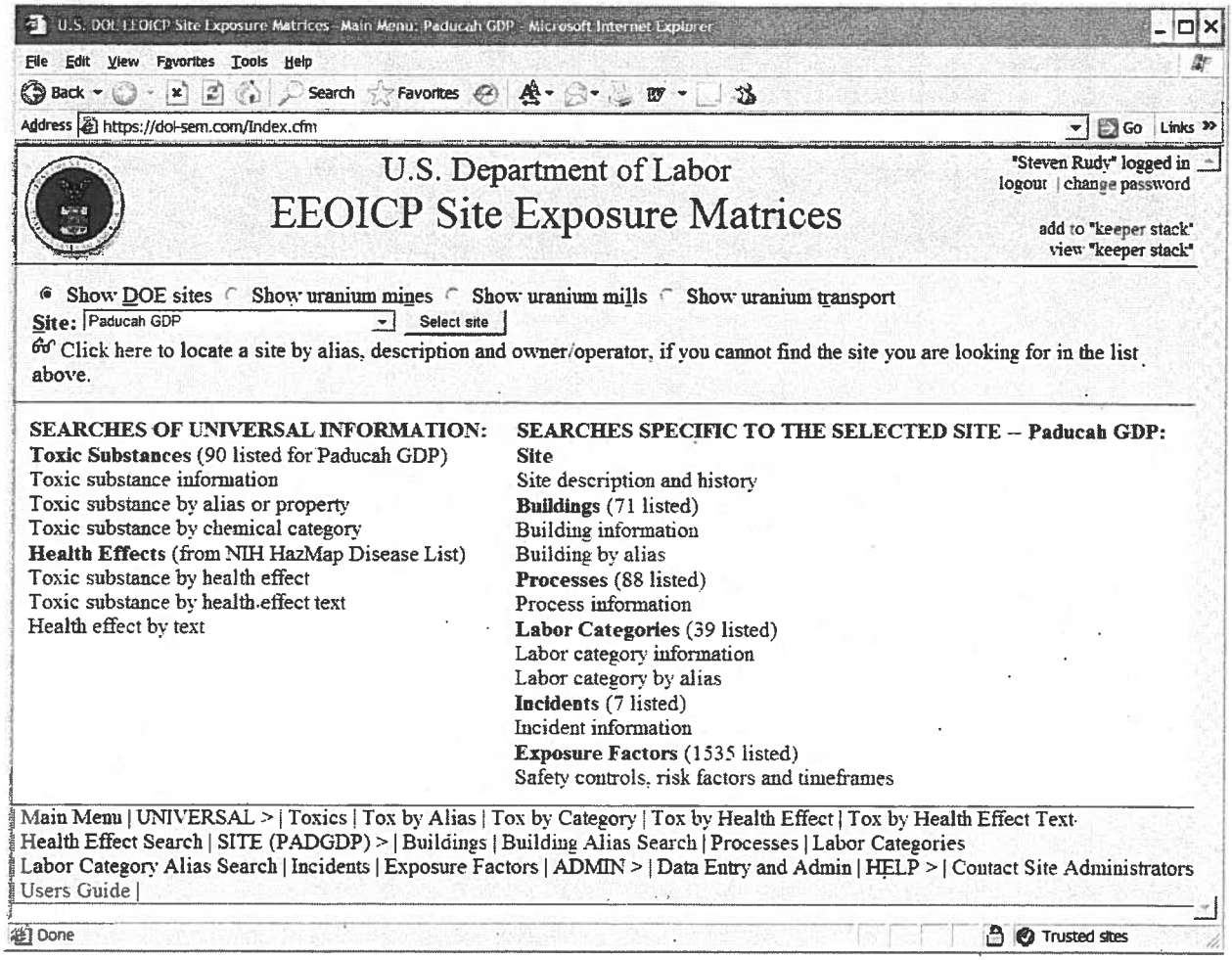

Figure 5: Main Menu (after site selection)

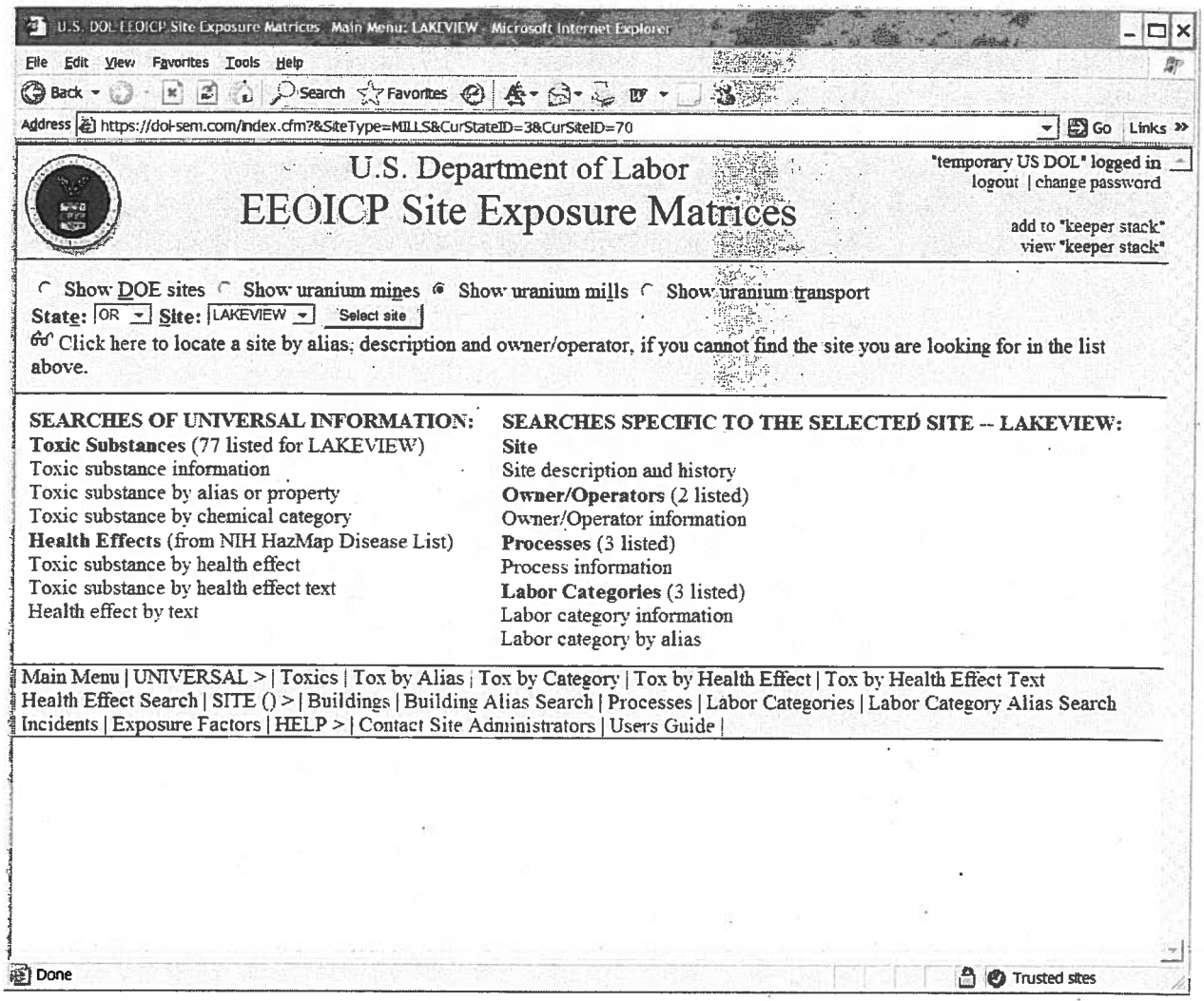

Figure 6: Main Menu (after mill selection)

Site-specific searches available are listed below. Note that those not applicable to a given site will not be displayed on the main menu. For example, the Paducah GDP does not have any defined *areas*, though it does have defined *buildings*. Therefore, the main menu for Paducah GDP will include links for building searches but not for area searches. (Note – The *Construction* "site" contains only work processes, labor categories and toxic chemicals, and has no defined areas, facilities, buildings or incidents.)

Toxic substances

- *Toxic substance information*. The function of this link is the same as described in Section 7.1, above, except that: (a) only toxic substances known to be at the selected site are available for selection; and (b) site-specific information is also

presented. Site specific information on the page includes aliases (e.g., slang terms) for the toxic substance, areas, facilities and/or buildings where the substance was present, site processes or activities potentially using the substance, labor categories potentially exposed to the substance, and incidents which involved the release of the substance.

- *Toxic substance by alias or property*. The function of this link is the same as described in Section 7.1, above, except that: (a) only toxic substances known to b at the selected site are listed; and (b) the text search is also applied to site-specifi toxic substance aliases.
- *Toxic substance by chemical category*. The function of this link is the same as described in Section 7.1, above, except that only toxic substances known to be a the selected site are listed.

Health effects

- *Toxic substance by health effect*. The function of this link is the same as described in Section 7.1, above, except that only toxic substances known to be the selected site are listed.
- *Toxic substance by disease or health effect alias*. The function of this link is th same as described in Section 7.1, above, except that only toxic substances kno to be at the selected site are listed.
- *Disease or health effect by alias*. The function of this link is the same as described in Section 7.1, above.

Source documents

- *Document by document number or title text*. The function of this link is the s as described in Section 7.1, above, except that only sources deemed relevant t selected site are listed.

Site

- *Site history*. Using this link will open a summary page for the selected site. mines, mills and ore transporters, the page presents: the state and/or county (mines only) in which the site is located; a list of owners and operators with t timeframes in which they were active at the site. For all sites, the page displ list of sources from which SEM data have been extracted. Use this link if y want to become familiar with operations at a particular site.

Explanatory note regarding areas, facilities, and buildings:

All DOE sites have structures that are called "buildings" in SEM. A buildi where most work activities would have been performed, and where most to substance exposures would have occurred. In most cases, a building will h either a number, a title, or both. A few DOE sites also have "facilities" an

"areas." Facilities are a small cluster of buildings, typically 3-9. An area is a larger grouping of buildings, typically 10 or more. A site may have just buildings; buildings and facilities; buildings and areas; or buildings, facilities, and areas.

It is important to remember that DOE sites were not consistent with building/facility/area terminology. It is common for a DOE document to refer to a building as a facility at one site, while at another site the word "facility" may refer to the entire DOE plantsite. In SEM, the definitions above are used.

Areas (only displayed if the selected site has defined areas)

- *Area information.* Using this link will open the focus page for areas (see Section 8 for addition information on Focus Pages). The page presents a selector control (drop down menu) that lists all the formally-defined areas at the site, by number and/or title (e.g. Hanford; Area 200 East). Use this link if you know what area(s) the claimant worked in.

Facilities (only displayed if the selected site has defined facilities)

- *Facility information.* Using this link will open the focus page for facilities (see Section 8 for addition information on Focus Pages). The page presents a selector control (drop down menu) that lists all the formally-defined facilities at the site, by number and/or title. Use this link if you know what facility the claimant worked in.

Buildings (only displayed if the selected site has defined buildings)

- *Building information.* Using this link will open the focus page for buildings (see Section 8 for addition information on Focus Pages). The page presents a selector control (drop down menu) that lists all the major buildings (by number and title) at the site. Use this link if you know what building(s) the claimant worked in.
- *Building by alias.* This link will allow you to type in a slang or common name used by a claimant that does not appear on the list of Buildings above. The SEM will list the proper names and numbers of buildings to which the slang or common name could refer.

Processes (only displayed if the selected site has defined processes)

- *Process information.* Using this link will open the focus page for processes (see Section 8 for addition information on Focus Pages). The page presents a selector control (drop down menu) that lists all the processes performed at the site. Use this link if you know the type work performed (e.g., carpentry or crane operations).

Labor Categories

- *Labor category information*. Using this link will open the focus page for labor categories (see Section 8 for addition information on Focus Pages). The page presents a selector control (drop down menu) that lists all the labor classifications or work group titles at the site. Use this link if you know the claimant's job title (e.g., electrician).

  Use of labor category links is best after receipt of occupational information, e.g., Occupational History Questionnaire and/or DAR Request, that allow the CE to determine the labor category of the worker and what types of work activities were performed, and/or what buildings he/she worked in.

  NOTE – When a person is in a supervisory function over an hourly group (e.g., the foreman of electricians or the supervisor of process operators), then the profile for the supervised group (e.g., electrician or process operator) should be used.

  NOTE – In addition to the *Construction* "site", which provides information about potential trade-specific chemical exposures, each physical site (DOE site, uranium mine or mill) contains site-specific information about potential construction-related chemical exposures. Refer to Section 9, *Construction*, for a discussion of how to obtain both trade-specific and site-specific potential exposures to construction workers.

- *Labor category by alias*. If the claimant's job title does not appear on the down list of labor categories above, then the entry on the claims form may be a slang or unofficial title. You may be able to find the official labor category, e.g., maintenance mechanic, by keying in the slang or commonly used title, e.g., pipe fitter.

Incidents (only displayed if the selected site has known incidents)

- *Incident information*. Using this link will open the focus page for incidents (see Section 8 for addition information on Focus Pages). The page presents a selector control (drop down menu) that lists major toxic material incidents experienced at the site. The list entries take the form of: brief descriptive title of the incident, year the incident occurred, location of the incident (e.g., a building number). An example would be: *Uranium cylinder rupture and release, 1976, Building X-344*. Use this link if the claimant has referred to a particular accident or incident as having caused exposure to a toxic substance.

Exposure Factors (only displayed if the selected site has known exposure factors)

- *Safety programs, risk factors and timeframes*. Using this link will open the query page for safety programs, risk factors and timeframes. Safety programs are controls that may have reduced the likelihood of employee exposure to toxic substances. Risk factors are conditions or practices that may have increased the likelihood of employee exposures to toxic substances. Timeframes reflect known periods within which a particular correlation (e.g., a toxic substance in a building) was the case, or within which a safety program was in effect, etc. Read Section 10, *Safety Controls, Risk Factors and Timeframes*, for more information about this page. Use this link to determine issues affecting the *likelihood* of the claimant being exposed.

8. FOCUS PAGES FOR TOXIC SUBSTANCES, AREAS, FACILITIES, BUILDINGS, PROCESSES, LABOR CATEGORIES, AND INCIDENTS

The website presents pages for focusing on different items of interest: toxic substances, areas, facilities, buildings, processes, labor categories, or incidents. Each focus page presents a drop-down type control for selecting an item of interest, and a button to submit your request (see toxic substance focus page example in Figures 8-11).

Note – When no site is selected, and the focus is on a toxic substance, then selector lists all the toxic substances that have been entered in the SEM database. All other focus pages require a site to be selected before proceeding to select an item of interest.

If a site *has* been selected, then the selector lists all items in the focus class at that site (e.g., *all toxic substances known to be at site ABC*, or *all buildings at site XYZ*, etc.). The selected site is indicated near the top of each page.

Within SEM the various areas, facilities, buildings, processes, labor categories, incidents and toxic substances which are known to have existed or occurred onsite are related (linked) to one another. For example, such relationships expressed in the matrices might be:

- "Toxic *xxx* was in building *aaa* at some time;"
- "Activity *bbb* was performed by Labor Category *ddd* and involved work with Toxic *yyy* in Building *lll;*"
- "Activity *bbb* was performed by Labor Category *ddd* and involved work with Toxic *zzz* in Building *lll;*" and
- "Labor category *ppp* involved work at all parts of the site").

Once a Focus Item is selected, then the page displays: (A) information about the item; and (B) lists of related items at the site. The lists of related items presented are outlined in the following table:

Focus Item	Related Items Listed
toxic substance	areas, facilities, buildings, processes, labor categories, incidents
site	owners/operators
area	toxic substances, facilities, buildings, processes, labor categories, incidents
facility	toxic substances, areas, buildings, processes, labor categories, incidents

Focus Item	Secondary Filters Available
toxic substance	area, facility, building, process, labor category, incident
site	*none*
area	toxic substance, health effect, facility, building, process, labor category, incident
facility	toxic substance, health effect, area, building, process, labor category, incident
building	toxic substance, health effect, area, facility, process, labor category, incident
process	toxic substance, health effect, area, facility, building, labor category, incident
labor category	toxic substance, health effect, area, facility, building, process, incident
labor category "Construction Worker"	area, facility, building
incident	*none*

Note: Applying a health effect as a secondary filter is the same as filtering on the *set* of toxic substances which may cause the selected health effect. For example, if the focus is on Paducah and Building C-331, selecting the health effect "chloracne" as the secondary filter results in a list of toxic substances (Chlorodiphenyl) in that building that could have caused this condition, the work process (Electrical maintenance, process areas) that used the toxic substance, and the labor category (Electrical mechanic) that performed the work process.

8.2 SPECIAL FEATURES OF THE TOXIC SUBSTANCE FOCUS PAGE

The toxic substance focus page for each substance has links to resources that provide the Claims Examiner additional information about a substance. These are described below using an example. Continuing the Paducah example, from the Main Page the Claims Examiner selects Paducah as the site and then clicks on "Toxic substance information." "Uranium hexafluoride" is selected from the drop-down menu. Information about the use of uranium hexafluoride in the Paducah GDP is displayed including the following links:

- Health hazards rating. SEM may display up to three hazard ratings for the selected toxic substance: NFPA, HMIS and SAX. Clicking on the hazard rating, e.g, **SAX: 3 (High toxic, fire, explosion or reactivity hazard),** displays a definition of the hazard rating system. Each of these ratings systems provides the Claims Examiner information about the relative hazard of a toxic substance. The **National Fire Protection Agency (NFPA)**

system identifies the degree of severity of the toxic substance's health hazards as indicated by a numerical rating that ranges from zero (0) indicating a minimal hazard, to four (4) indicating a severe hazard. The **Hazardous Material Inventory System (HMIS)** system identifies the degree of health severity by a rating system similar to that of the NFPA, ranging from zero (0) indicating no significant risk to health, to four (4) indicating a life-threatening or major risk. The **SAX** hazard rating system ranges from one (1, low) to three (3, high). Unlike the NFPA and HMIS ratings, the SAX rating applies to the combination of a toxic substance's toxic, explosive, fire and reactivity hazards, and is not exclusive to health hazards. **Note**: Some toxic substances in SEM are not covered by all three hazard rating systems. In such cases, only the applicable ratings systems are displayed.

- References. There are two icons in the References row. Clicking on the *Flask* icon (; Figure 7) opens the National Institutes of Health Haz-Map page for the toxic substance. This site contains expanded information about the selected substance and also contains links to other useful databases. Haz-Map is an occupational toxicology database developed by the National Institutes of Health that links toxic substances to occupational diseases. Haz-Map is the only source used by SEM to identify occupational diseases for claims adjudication. Haz-Map uses information from textbooks, journal articles, and electronic databases (Hazardous Substances Data Bank, Agency for Toxic Substances and Disease Registry Toxicological Profiles, ACGIH Documentation of Threshold Limit Values, NIOSH Technical Information Center, and others) as the source of its information on 1237 chemical and biological agents. **Note**: Some toxic substances in SEM are not covered by Haz-Map. In such cases, there will be no *Flask* icon () displayed on the chemical profile page.

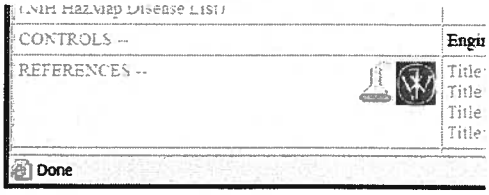

Figure 7: Detail of Toxic substance page, references section

Clicking the *Wiley* icon (; Figure 7) symbol opens the Wiley Interscience *SAX's Dangerous Properties of Industrial Materials* page for the substance. This is a restricted site for which DOL pays a flat subscription fee to access. The site provides additional information on the substance including its hazard rating, entry name, CAS number, DOT number, molecular formula, line structural formula, a description of the material and physical properties of the chemical, synonyms, and toxicology data with references for reports of primary skin and eye irritation, mutation, reproductive, carcinogenic, and acute toxic dose data. It is important for the Claims Examiner to note that SAX's health effects information is not used by the EEOICPA for identifying a cause-effect relationship between a toxic substance and an occupational disease. However, a Claims Examiner may find the supplemental information provided by SAX helpful to fully understanding a toxic substance. **Note:** Some toxic substances in SEM are not covered by SAX. In such cases, there will be no Wiley icon () displayed on the chemical profile page.

EXAMPLE 1 – Focus Page for Toxic Substance

U.S. DOL EEOICP Site Exposure Matrices - Toxic Substance: Uranium hexafluoride - Microsoft Internet Explorer

File Edit View Favorites Tools Help

Back Search Favorites

Address https://dol-sem.com/Tox2.cfm Go Links

U.S. Department of Labor
EEOICP Site Exposure Matrices

"Steven Rudy" logged in
logout | change password

add to "keeper stack"
view "keeper stack"
print-ready view

Toxic substance: Uranium hexafluoride (7783-81-5) Select substance

click here to locate a chemical by alias or physical/chemical property.

Secondary filters to apply to lists of related items (from Paducah GDP):

Building:

Process:

Labor category:

Incident:

Site: Paducah GDP

Toxic Substance: Uranium hexafluoride

IDENTIFICATION	CAS: 7783-81-5 Aliases: UF6; Uranium fluoride; dust; heavy gas Category: Radiation and Radioactive Substances
PROPERTIES	Physical: Colorless crystals Chemical: Reacts rapidly and violently with water and hydroxy compounds, e.g., alcohols. Reaction with water forms hydrogen fluoride gas. Soluble in carbon tetrachloride and chloroform. Highly corrosive.
HEALTH HAZARD RATINGS	SAX: 3 (High toxic, fire, explosion or reactivity hazard)
SPECIFIC HEALTH EFFECTS (NIH HazMap Disease List)	*no diseases are listed in NIH Haz-Map*
REFERENCES	Title: Hawley's Condensed Chemical Dictionary, 12 ed. Title: Physical & Theoretical Chemistry Lab., MSDS, 9/14/03 Title: SAX's Dangerous Properties of Industrial Materials, 9th ed. Title: U.S. National Library of Medicine, NIH Haz Map Occupational Toxicology Database
RECORD HISTORY	Modified: Jul 5, 2005

Trusted sites

Figure 8: Toxic substance page, 1 of 4

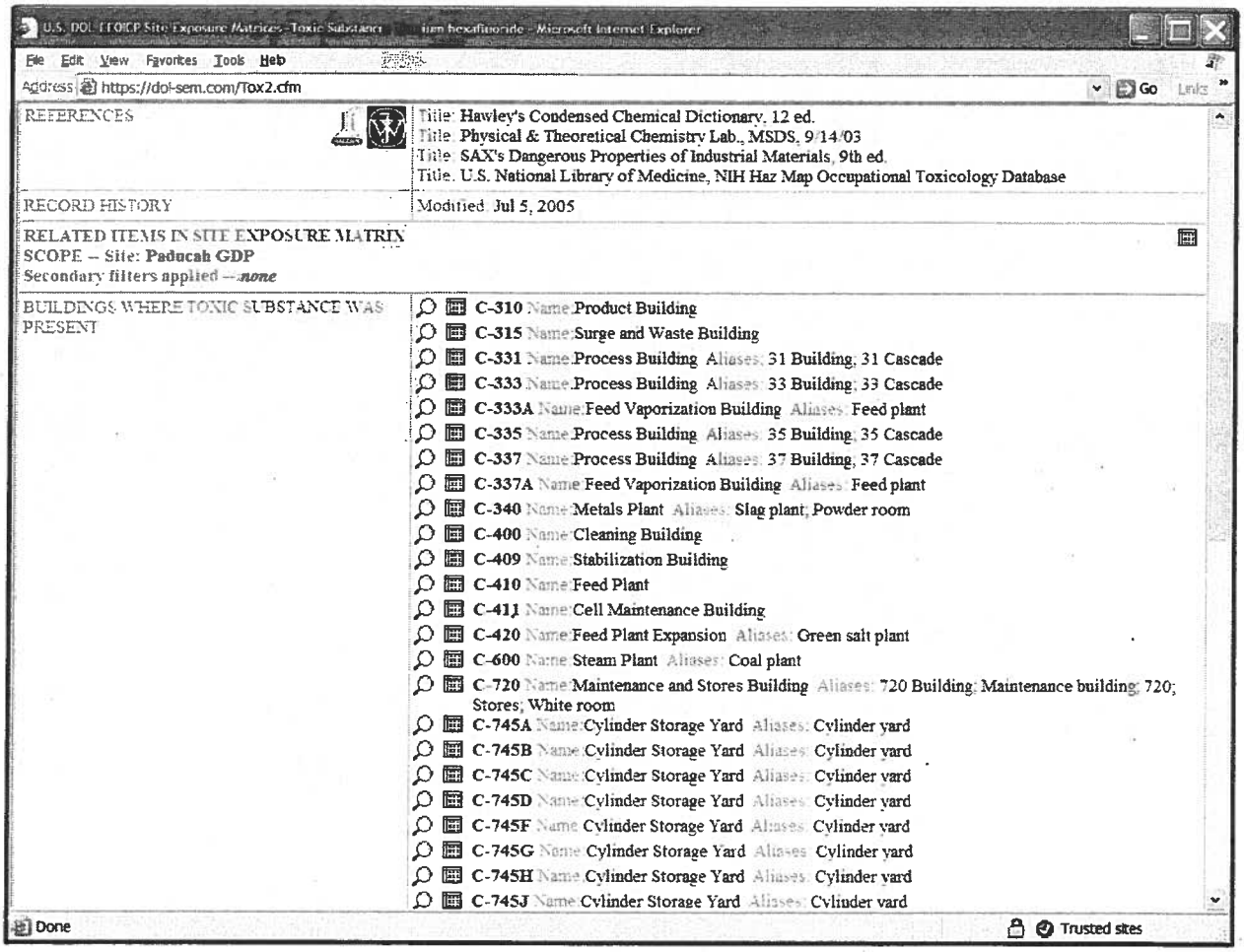

Figure 9: Toxic substance page, 2 of 4

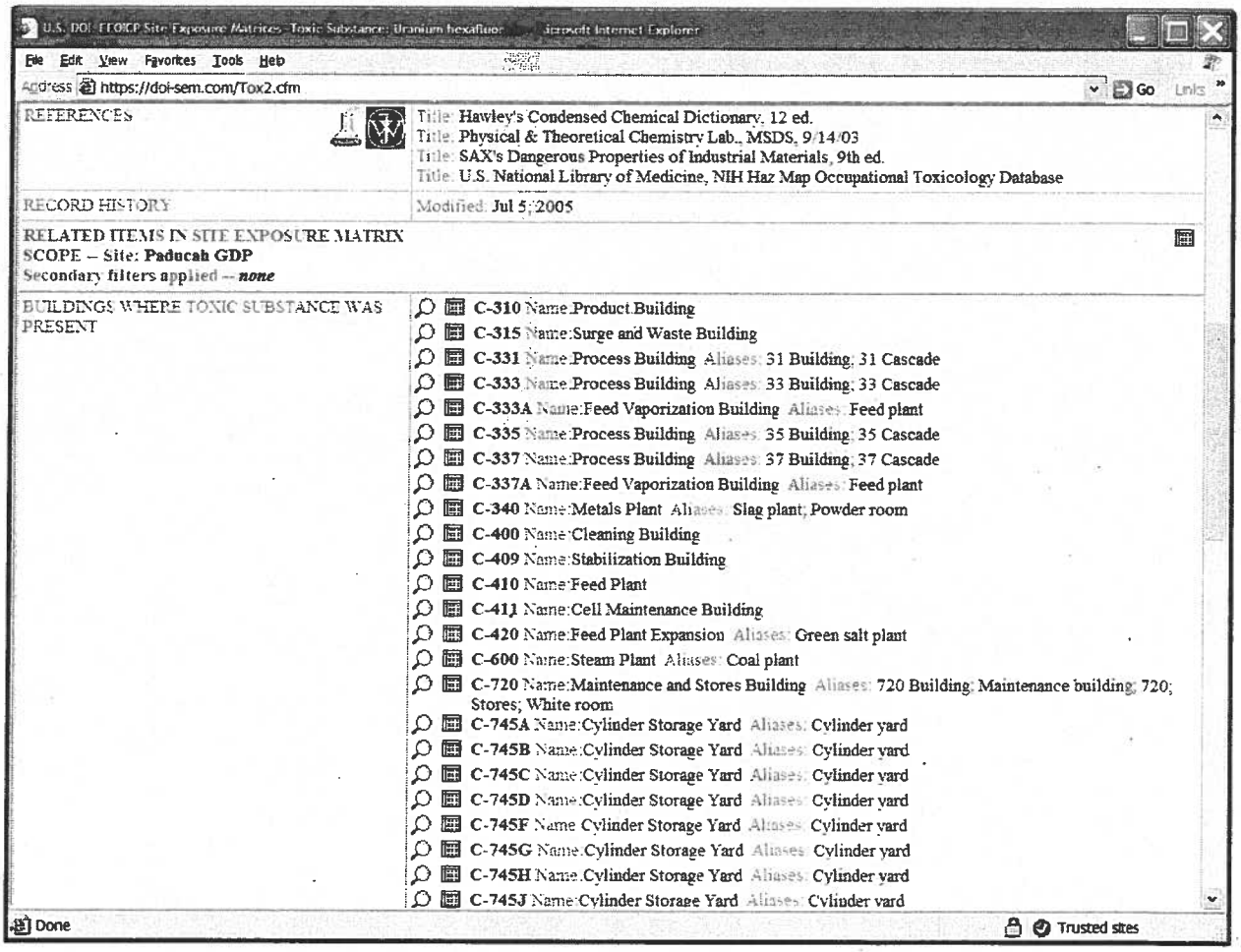

Figure 9: Toxic substance page, 2 of 4

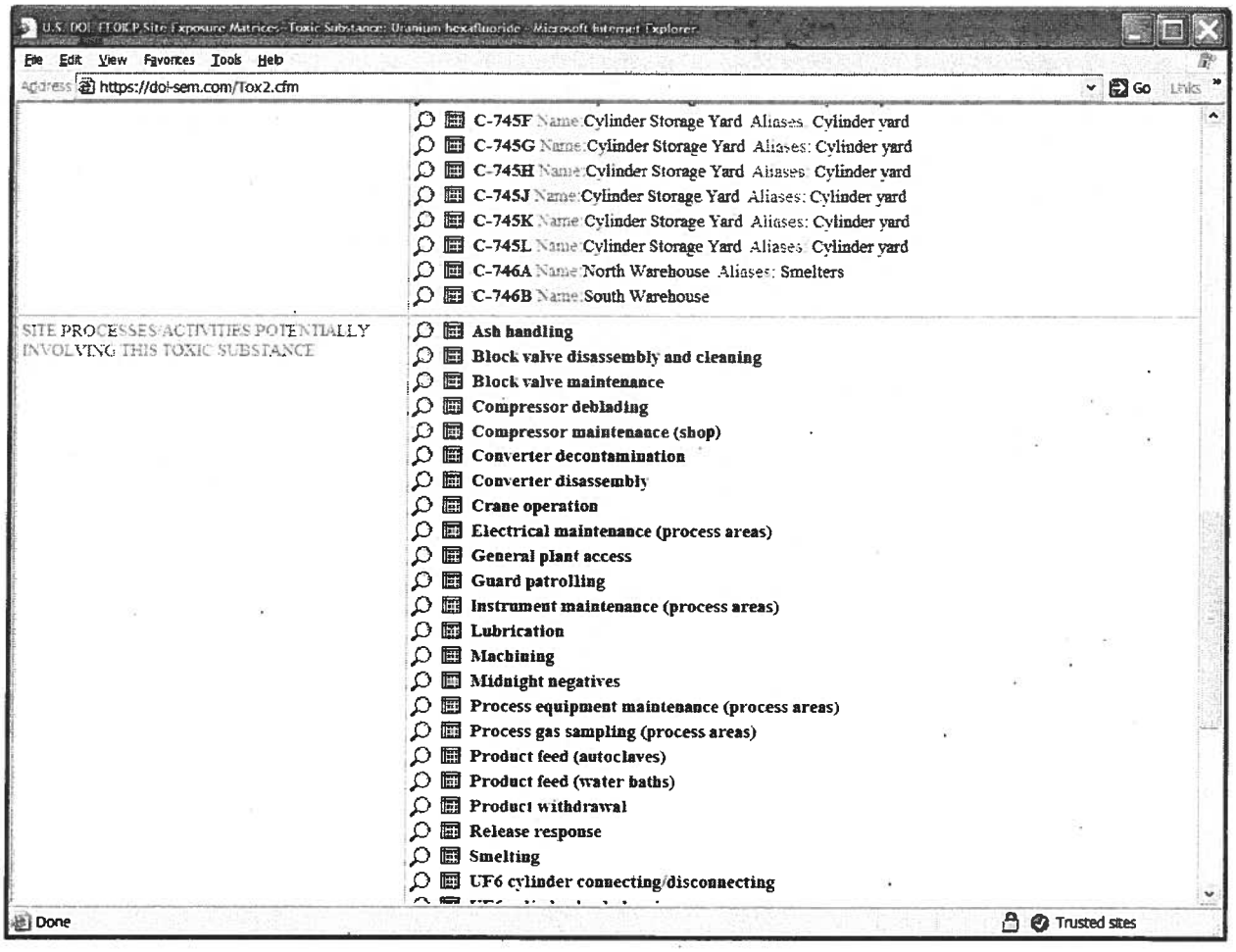

Figure 10: Toxic substance page, 3 of 4

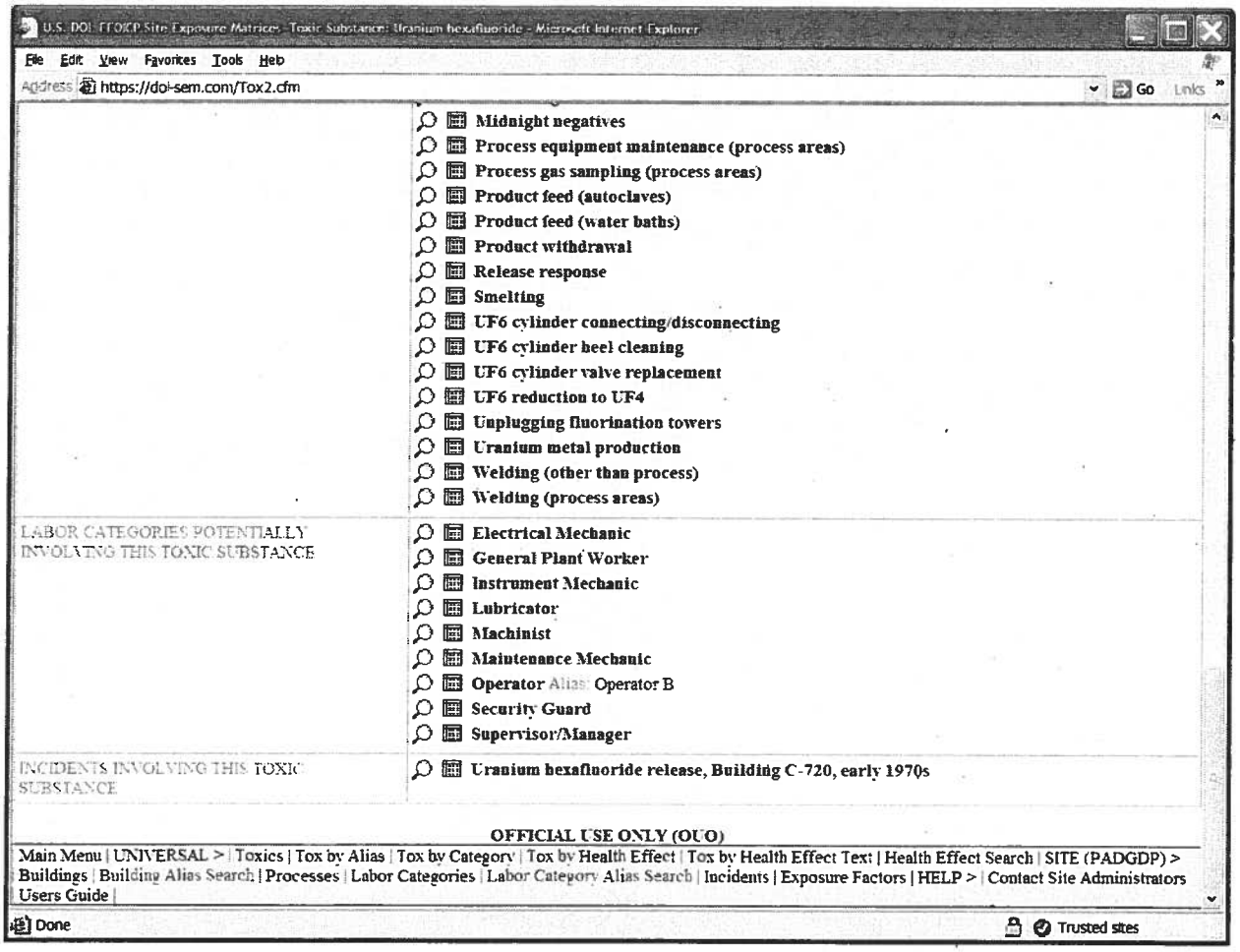

Figure 11: Toxic substance page, 4 of 4

EXAMPLE 2 – Focus Page for Toxic Substance, with Secondary Filter Applied

U.S. DOL-EEOICP Site Exposure Matrices - Toxic Substance: Uranium hexafluoride - Microsoft Internet Explorer

File Edit View Favorites Tools Help

Back Search Favorites

Address https://dol-sem.com/Tox2.cfm Go Links

U.S. Department of Labor
EEOICP Site Exposure Matrices

"Steven Rudy" logged in
logout | change password

add to "keeper stack"
view "keeper stack"
print-ready view

Toxic substance: Uranium hexafluoride (7783-81-5) Select substance

click here to locate a chemical by alias or physical chemical property.

Secondary filters to apply to lists of related items (from Paducah GDP):

Building: C-331 Process Building

Process:

Labor category:

Incident:

Site: Paducah GDP

Toxic Substance: Uranium hexafluoride

IDENTIFICATION	CAS: 7783-81-5 Aliases: UF6; Uranium fluoride; dust; heavy gas Category: Radiation and Radioactive Substances
PROPERTIES	Physical: Colorless crystals Chemical: Reacts rapidly and violently with water and hydroxy compounds, e.g., alcohols. Reaction with water forms hydrogen fluoride gas. Soluble in carbon tetrachloride and chloroform. Highly corrosive.
HEALTH HAZARD RATINGS	SAX: 3 (High toxic, fire, explosion or reactivity hazard)
SPECIFIC HEALTH EFFECTS (NIH HazMap Disease List)	*no diseases are listed in NIH Haz-Map*
REFERENCES	Title: Hawley's Condensed Chemical Dictionary, 12 ed. Title: Physical & Theoretical Chemistry Lab., MSDS, 9/14/03 Title: SAX's Dangerous Properties of Industrial Materials, 9th ed. Title: U.S. National Library of Medicine, NIH Haz Map Occupational Toxicology Database
RECORD HISTORY	Modified: Jul 5, 2005

Done Trusted sites

Figure 12: Toxic substance page, with secondary filter applied, 1 of 2

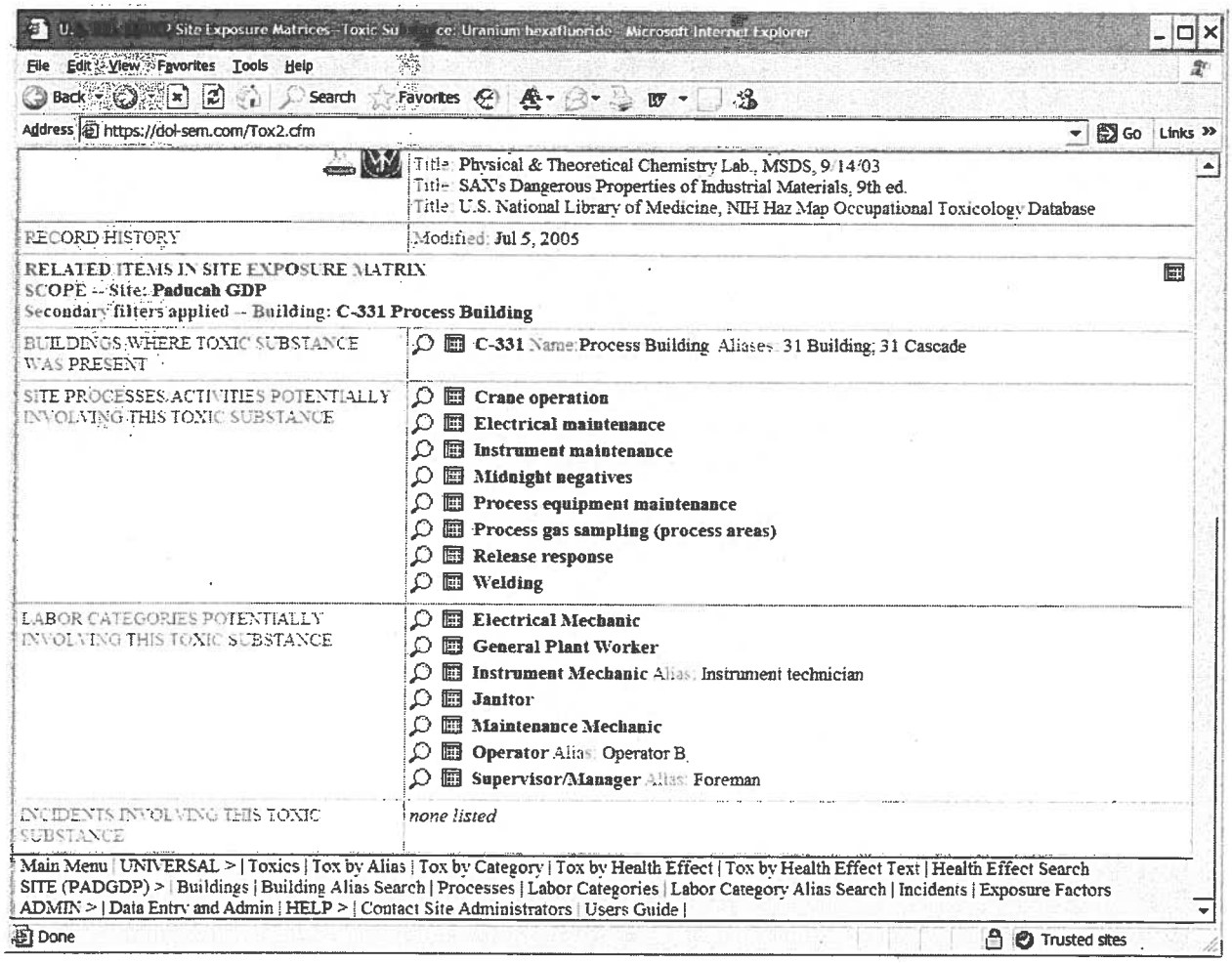

Figure 13: Toxic substance page, with secondary filter applied, 2 of 2

9. CONSTRUCTION

Evaluating potential construction worker exposures to toxic substances requires a two-step process. Construction worker exposures are separated into two categories: exposures due to toxic substances inherent to the construction craft, and exposures to toxic substances caused by performing the construction work on a DOE site. The following steps should be used by the Claims Examiner to evaluate a potential construction worker exposure:

Step 1. Identify the toxic substances and hazards inherent to the construction craft. These are exposure hazards typical of general craft work activities and are independent of the site where the work is being performed.

- Go to the *Main Menu*. Select *Construction (all sites)* from the drop down Site menu.
- Search in the manner described in Section 7.2. Note that the *Building* and *Incident* links do not appear on the *Main Menu* because those topics do not apply to general Construction activities.
- The results of this search must be combined with those of Step 2 to complete the evaluation of a construction worker's potential exposure.

Step 2. Identify the additional toxic substance exposures caused by performing construction work on a DOE site.

- Go to the *Main Menu*. Select the DOE site where construction work was performed from the drop down Site menu.
- Select the *Labor category information* link. From the drop-down menu, select *Construction worker*. **Note**: Individual construction craft titles are NOT listed in the list of labor categories.
- Select the location where construction work was performed from the *Area*, *Facility*, or *Building* drop-down menu. The results are filtered to show only those substances used in the selected location.
- The list of substances returned are those used in any operating process in the selected location (area, facility or building). This does not mean the claimant was exposed to all the substances. Using information external to SEM, the claims examiner will need to determine which, if any, of the substances were experienced by the claimant. It is highly

unlikely that any construction worker would be exposed to all the toxic substances in a given location.

Step 3. Combine the results from Step 1 and Step 2. The resulting list defines the **maximum** exposures that a construction worker at a DOE site could have experienced.

10. SAFETY CONTROLS, RISK FACTORS AND TIMEFRAMES

Within SEM, as discussed in Section 8 *Focus Pages*, the various areas, facilities, buildings, processes, activities, labor categories, incidents and toxic substances which are known to have existed or occurred onsite are related (linked) to one another. For example,

- "Toxic *xxx* was in building *aaa* at some time;"
- "Activity *bbb* was performed by Labor Category *ddd* and involved work with Toxic *yyy* in Building *lll;*"
- "Activity *bbb* was performed by Labor Category *ddd* and involved work with Toxic *zzz* in Building *lll;*" and
- "Labor category *ppp* involved work at all parts of the site").

Sometimes these relationships between a toxic substance, an area, a facility, a building, a process, a labor category, and/or an incident can be characterized in greater detail, such as by timeframe (e.g., "... from 1961 to 1963"), and/or by factors which would protect energy employees from exposure (e.g., "monitors for *yyy* were in place ... "), and/or by factors which would have increased the likelihood of personnel exposure (e.g., "PPE, though required, was rarely worn...").

The *Safety Controls, Risk Factors and Timeframes* page (Figure 14), which can be opened by clicking the grid (▦) icon on focus pages or opened directly from the *Main Menu*, presents these SEM annotations and a form for applying filtering criteria.

Annotations are displayed in tabular format for all matching SEM items, sorted by area name, facility name, building name, process title, labor category, incident title and toxic substance name. As known or applicable, each entry includes: the known timeframe of applicability of the entry; the known safety controls; the known exposure risk factors; and a link to a list of sources from which these annotations were taken — the notes (🗎) icon.

The page presents controls for filtering (shortening) the list based on any of the sorting fields. Any number of filter selections may be made, each one of which further narrows the scope of the search. In addition, the *Include Site-Wide Issues* checkbox, allows inclusion of SEM annotations which are applicable to *all* areas, facilities, buildings, processes, labor categories, incidents and toxic substances on site.

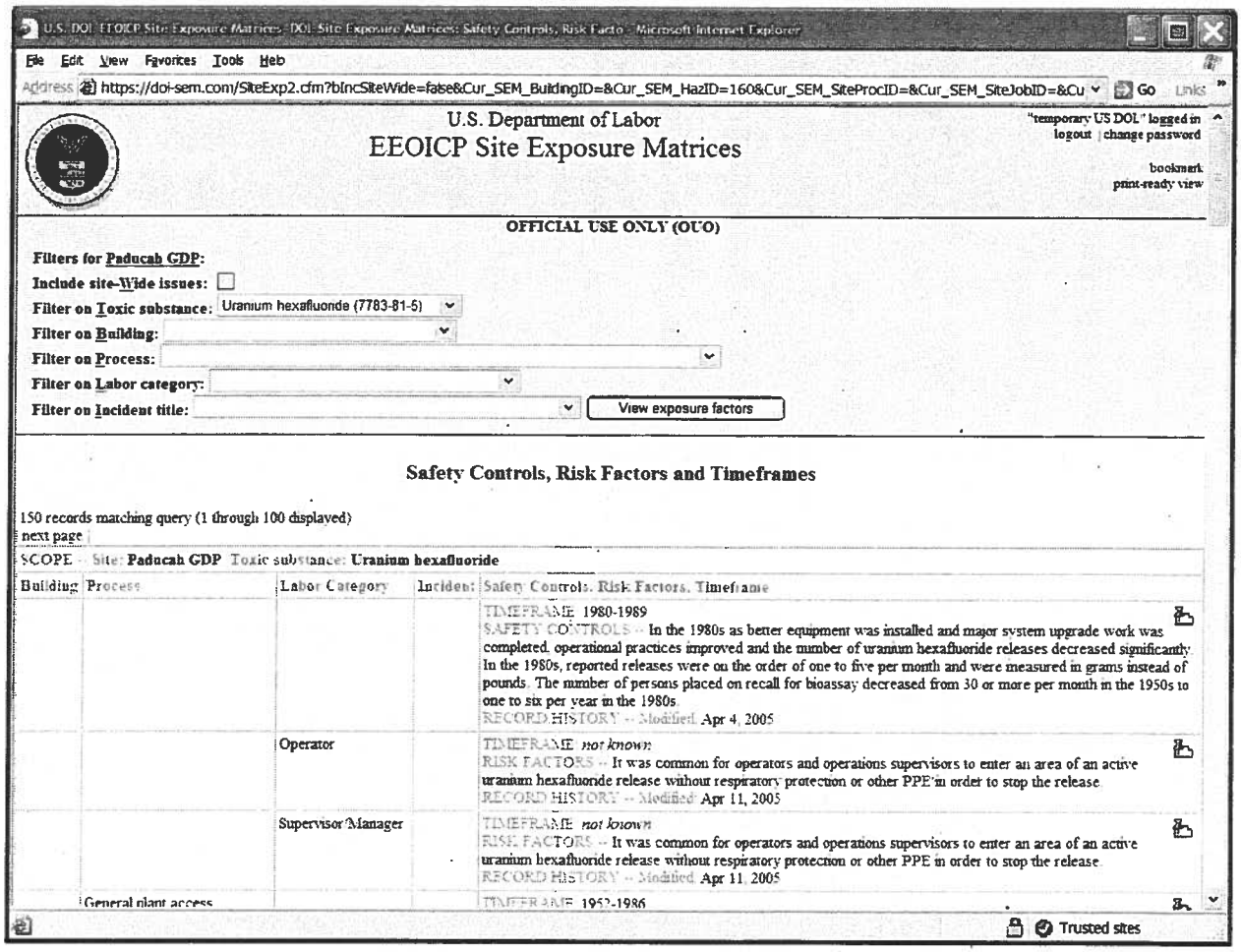

Figure 14: Risk Factor and Safety Program (Site Exposure Matrix) Page

11. SEARCH PAGES

Because claims may not always identify toxic substances, health effects, areas, facilities, buildings, process (activities), labor categories (jobs) and incidents the way they are formally listed in the SEM database, several text searches are provided to help you find the proper items of interest. These searches are indicated and can be accessed by clicking the glasses (🕶) icon which is presented beneath the primary selector on focus pages (Figure 8, page 28, for example).

Each search accepts a text or selector input and presents a button for initiating the search. A link is provided for viewing the details of each matching item, using the magnifying glass (🔍) icon.

Available searches are shown below.

Item Being Sought	Search Type	Information Searched
Site	Alias text search	site name, owner/operator name, owner/operator alias
Toxic substance	Alias text search	toxic substance name, toxic substance aliases, chemical properties, physical properties, site-specific toxic substance aliases
	Substance category by selection	chemical category
	Health effect text search	health effect
Health effect	Health effect text search	health effect
Building	Alias text search	building aliases
Labor category	Alias text search	labor category (job) aliases
Incident	By area, facility, building, process, labor category and toxic substance	related items in SEM database

10.1 GUIDELINES FOR TEXT SEARCHES

Some attempts have been made to anticipate the different ways that names and aliases might appear in claims. Nevertheless, when searching for an item which is, or could be, expressed in a multi-word or hyphenated form, regardless of how it appears in a claim, it is suggested that the search be performed for one word at a time from the multi-word or hyphenated phrase.

For example, when searching for the formal toxic substance name for "yellow cake", you may get better results by searching for "yellow" and "cake" separately, to ensure that all possible toxic substances are found which may be intended by the claimant.

It is important to keep in mind that searching for partial words may return items not relevant to the claim. For example, searching for "leu" in the toxic substance alias search will return both *uranium* (via the abbreviation for low-enriched uranium) and *petroleum*.

12. SAVING A LINK TO A PAGE

If you want to easily return to a particular page / view at a later time, you can save a link to it using the feature known as the "keeper stack" (e.g., to check back in at a later time, to look for new or changed data pertinent to an aspect of a claim).

To do so, click on *add to "keeper stack"* in the right-hand portion of the page header (beneath the logged user identification; Figure 15). A link to the current page will be saved in the keeper stack," and the keeper stack will be displayed.

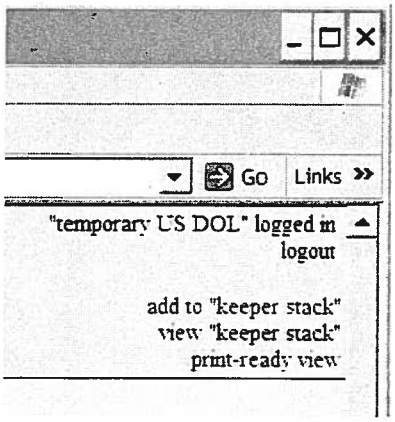

Figure 15: Page masthead detail

Note that taking this action only saves search parameters in the keeper stack. No data are saved. Instead, the saved link corresponds to queries submitted to SEM. The returned data may be different one month to the next, as more site-specific data are entered into SEM.

The keeper stack page lists saved links with the date and time they were saved. A checkbox is also provided for each link selecting the link, as well as controls for deleting selected links and for printing pages corresponding to selected links.

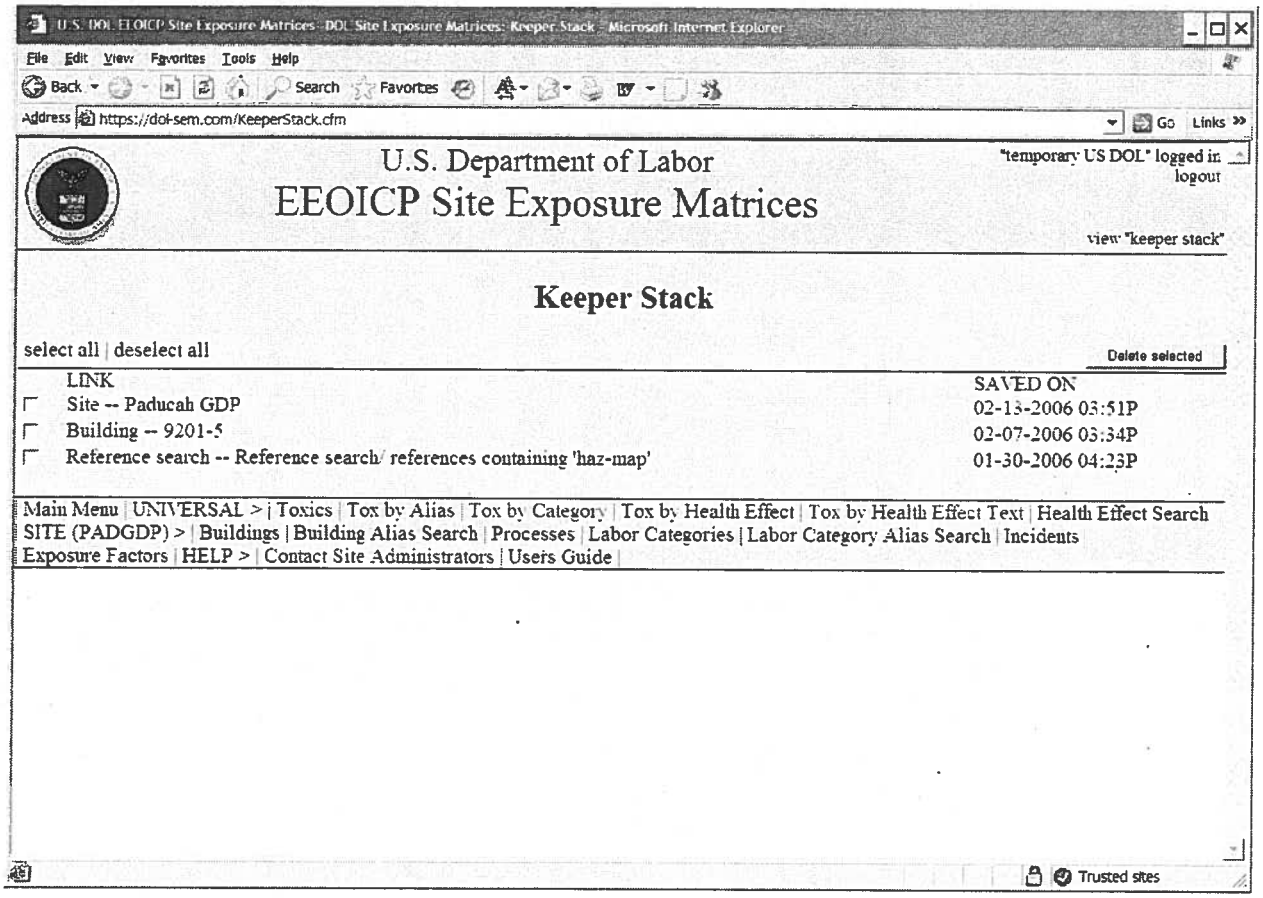

Figure 16: "Keeper stack" example

13. PRINTING A PAGE

Though the normal page views have been optimized for navigation, if you want to have a paper copy of any page, you should use the *print-ready view* link in the right hand portion of the page header (Figure 15). The resulting view (Figure 17), opened in a separate window, will contain the same data as you currently see on screen, but have user interface elements removed to create a clean print-out, and more importantly, have the content disclaimer included. The disclaimer is the same one you acknowledge at the beginning of each session.

Print the page from the browser as you would any web page (select **file | print** from the menu), then close the pop-up window to return to your original view and continue your session.

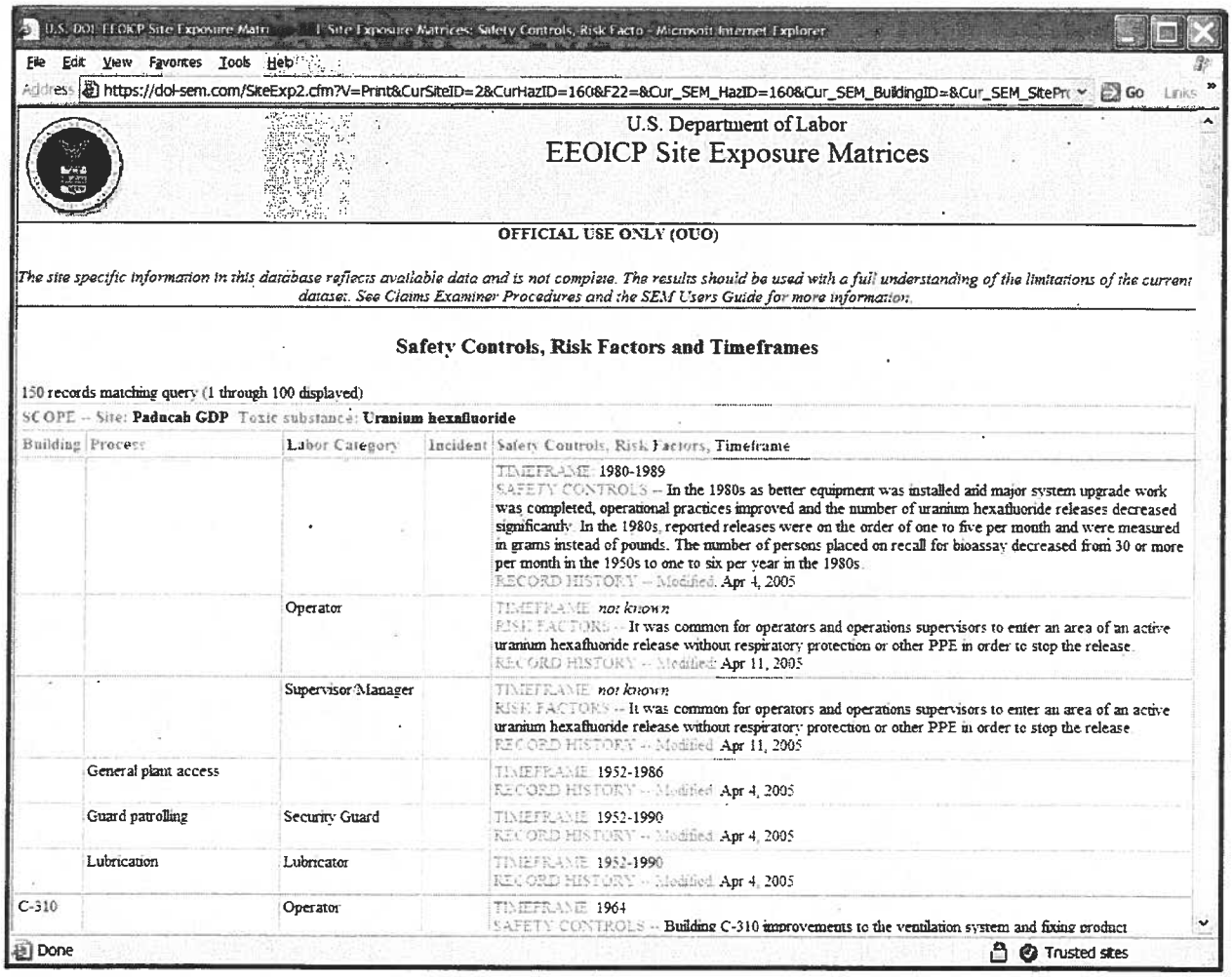

Figure 17: Sample "print view" page

15. LOGGING OUT

Log off as soon as you finish using the SEM web site. Do not go to another web site or close your web browser before logging off. To log off, click the *Logout* link in the upper right hand corner of each SEM page. After logging out, the Login Form is displayed. At this point, you may go to another web site or close your browser.

Revision History

DATE	VERSION	AUTHOR	CHANGES MADE
09/07/2005	1	Eagle Research Group	New document.
02/14/2006	2	Paragon Technical Services	Revised in keeping with changes to website and DOL review comments.