U.S. Army Research, Development and Engineering Command

Chemical Biological Material Effects (CBME) Database

17 May 2011

TECHNOLOGY DRIVEN. WARFIGHTER FOCUSED.

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Approved for public release; distribution unlimited.

Outline

- Background
- CBME Database Features
- CBME Database Challenges
- CBME Database Future
- Database Previews
- Demonstration
- Conclusion
- Questions

CBME Database Background

- CBME database was developed in response to Public Law 108-375 to create a Chemical and Biological Contamination Survivability (CBCS) policy and a centralized database.
- Development performed under guidance of an Executive Steering Committee (ESC) chaired by the Army Research Laboratory Survivability Lethality Analysis Directorate (ARL/SLAD)
- Joint multi-service and agency representation on ESC directed development and database architecture

CBME Database Background

- Database structure and objective data content defined by “Materials and Properties Matrix” from CBME Materials Sub-Group
- ARL/SLAD collaborated with the Chemical Biological Radiological and Nuclear Defense Information Analysis Center (CBRNIAC, Battelle) CBME database development effort
- CBME database maintenance resourced by DATSD (CBD&CDP) as per DoDI 3150.09 through PAIO, ARL/SLAD and CBRNIAC

CBME Database Features

- The CBME database contains a wealth of information on the effects of chemical agents, biological agents, decontaminants and simulants, for materials used in defense critical systems
- Material effects data addresses hardness and decontaminability issues in support of design, test, and evaluation of DoD systems
- This dedicated source for material effects data can significantly reduce the cost and risk associated with fielding Chemical and Biological (CB) survivable systems
- Data is available to qualified government and contractor personnel via web based, user friendly easily accessible site

CBME Database Features

- Extensive data repository includes material effects on over 560 materials
- Database content has been extracted from legacy databases and current literature (data identified through searches and reviewed for relevance)
  - Chemical Defense Material Database
  - Air Force Material Effects Database
  - Edgewood Chemical Biological Center
  - West Desert Test Center
  - Naval Surface Weapons Center
  - Defense Technical Information Center
  - CBRNIAC

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CBME Database Features

- Multiple query systems are available to quickly identify data of interest
- Database query results can to be exported in Excel format to user's desktop for analysis
- Most source documents are available for download and several additional CBR Contamination Survivability reference documents are also available
- Literature searches are ongoing, and the CBME is continuously updated with new data

CBME Database Challenges

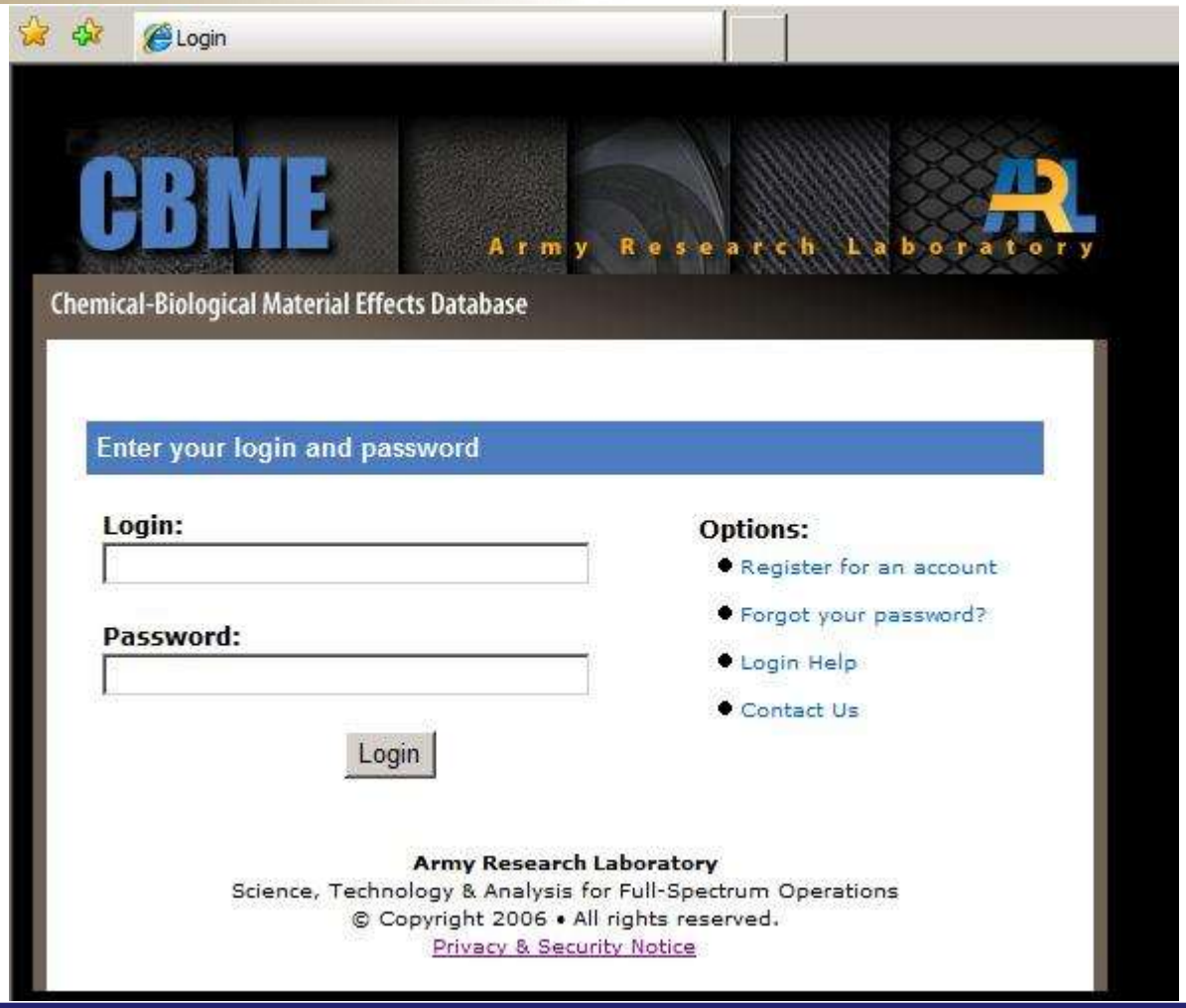
- Data voids exist, some content is dated
- Current data distribution level is Government and Government Contractor only
- New CBME Database site will be at the Government level only
  - This will broaden the field of current, relevant, and available data from existing search sources
    - Some previous documents excluded due to distribution restrictions will now be available

CBME's Future

- Value of CBME depends on new test data
- Government agencies and contractors need to ensure their material effects test data is sent to DTIC for inclusion
- Sharing your data is a win win solution for the entire community

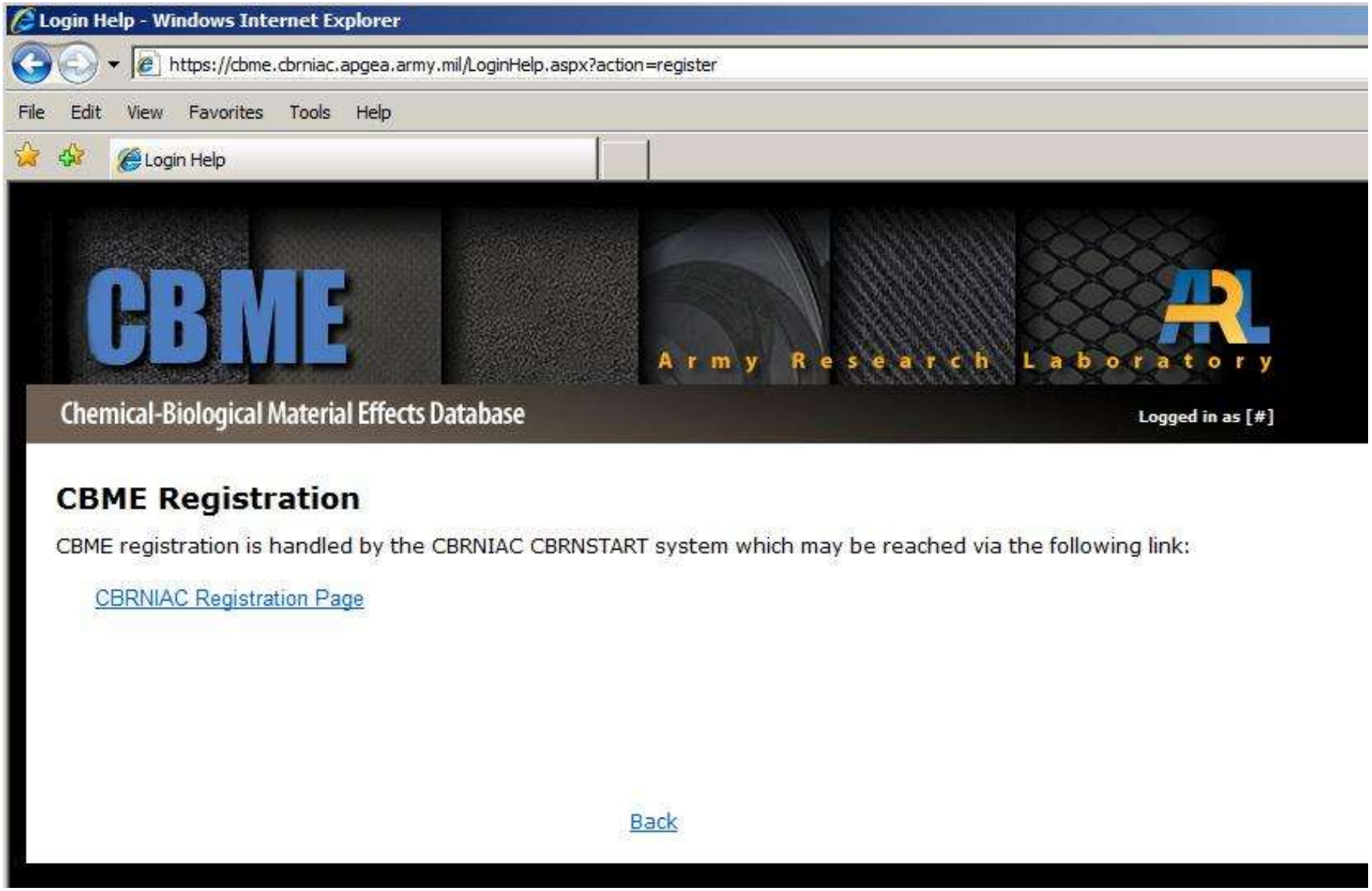
CBME Database Preview

CBME Login & Register for an Account



URL: https://cbme.cbrniac.apgea.army.mil/

Register for an Account



Register for an Account

Registration Notice

To ensure the privacy of our users and the security of our data, we are using a multi-step registration process for this system and all sites which are contained in it. Because this process will take some time, please be patient. The steps to register are the following:

1. Enter and submit basic information, such as name, business/organization name and address, work reference information, phone numbers, fax numbers, e-mail address(es), and (optionally) shipping and billing addresses. After submitting the required basic information, the system will send an e-mail to the business e-mail address that you enter. You must read and respond to that e-mail within three (3) calendar days to validate your account or we will delete the account.
2. When you respond to validate your account, you will then be given the option to choose the sites that you wish to access and supply any additional required/optional information for the chosen sites. Once you have submitted the required information, the system will send a notice of your application to the site administrator of each site you have chosen to access.
3. After receiving the notice that you have applied for access to a site, the site's administrator will review your basic and site-specific information and approve/disapprove your access to the site. This decision will be returned to you in an e-mail, one for each site to which you applied for access. If approved, you will be able to access the site once you have received the return e-mail from the site administrator. Please note that some site administrators may not accept accounts with business e-mails from juno.com, hotmail.com, or yahoo.com. Please also note that if you request access to many sites/communities in the system, you will receive many e-mails.

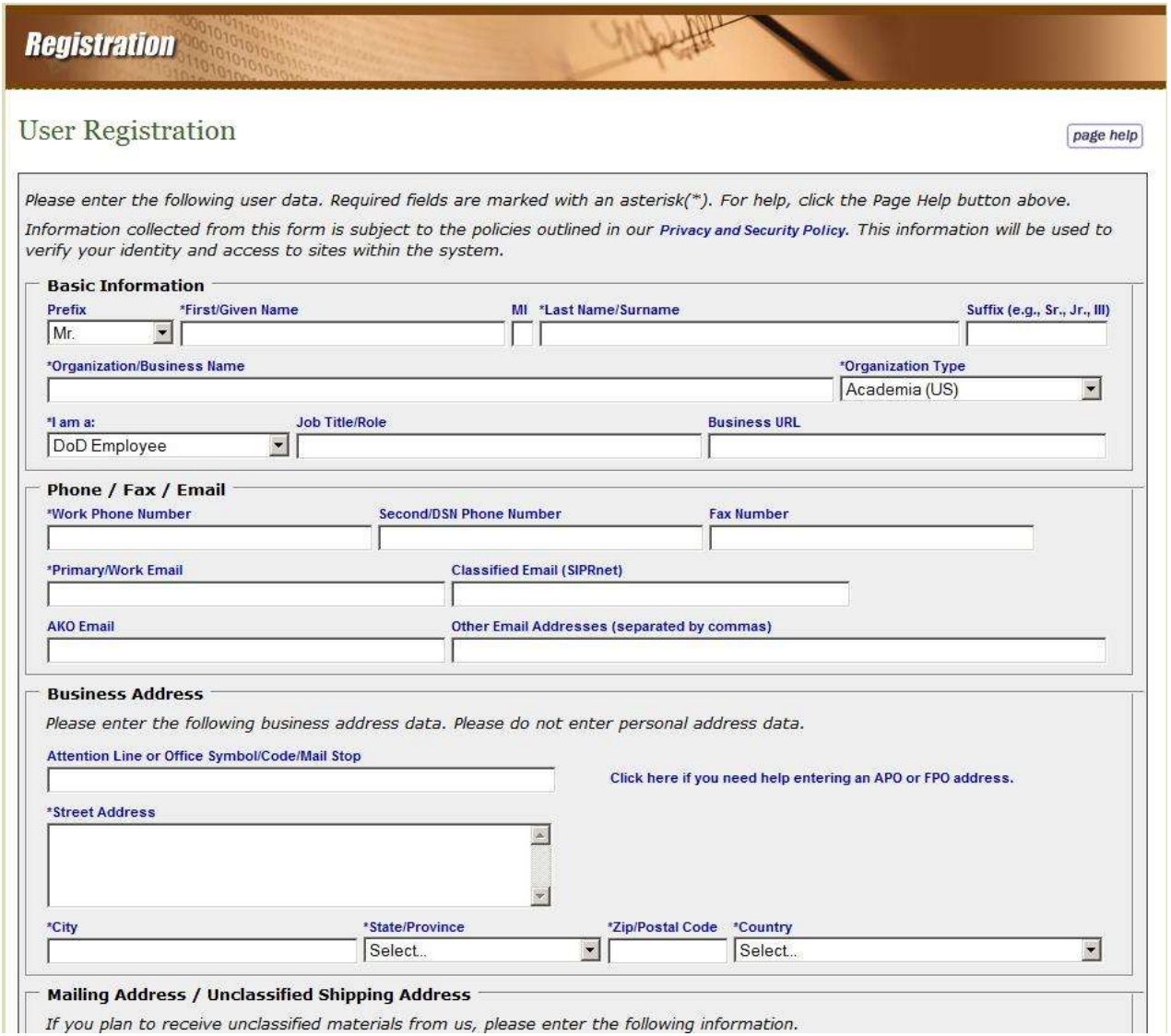
We take privacy and security seriously for this system. If you want to view our Privacy and Security Policy for this system (which applies to all sites in this system), please **click here**.

If you would like a detailed list of basic data required for registration along with the additional data needed for access to the CBRNIAC Database, please **click here**.

☐ Please check this box to show that you have read this registration notice.

Next -> | Close

Register for an Account



Registration

User Registration

page help

Please enter the following user data. Required fields are marked with an asterisk(*). For help, click the Page Help button above.

Information collected from this form is subject to the policies outlined in our Privacy and Security Policy. This information will be used to verify your identity and access to sites within the system.

Basic Information

Prefix: Mr. | *First/Given Name | MI | *Last Name/Surname | Suffix (e.g., Sr., Jr., III)

*Organization/Business Name | *Organization Type: Academia (US)

*I am a: DoD Employee | Job Title/Role | Business URL

Phone / Fax / Email

*Work Phone Number | Second/DSN Phone Number | Fax Number

*Primary/Work Email | Classified Email (SIPRnet)

AKO Email | Other Email Addresses (separated by commas)

Business Address

Please enter the following business address data. Please do not enter personal address data.

Attention Line or Office Symbol/Code/Mail Stop

Click here if you need help entering an APO or FPO address.

*Street Address

*City | *State/Province: Select... | *Zip/Postal Code | *Country: Select...

Mailing Address / Unclassified Shipping Address

If you plan to receive unclassified materials from us, please enter the following information.

CBME Homepage

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'What's New' Section on Homepage

Chemical-Biological Material Effects Database

Logged in as [chrisorenhill] Log Out

The CBME Database is sponsored by the Department of Defense Chemical and Biological Defense Program under the oversight of the Deputy Assistant to the Secretary of Defense for Chemical and Biological Defense and Chemical Demilitarization.

The Database has been developed to help designers and developers with the task of incorporating Nuclear, Biological, and Chemical Contamination Survivability (NBCCS) into system design and development. The database system contains data from technical reports on over 550 materials that have been exposed to CW agents. The database details the effects of CW agents and decontaminants on specific properties of materials. There is an extensive ongoing review of test data and documentation not currently included in the database, and additional extracted data will be added in future updates.

HOME
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Contact Us

What's New on CBME

The nomination process has been updated but not activated on-line. Following final approval of the nomination process the CBME database nomination process will be activated

Try It Out: Since there will be a lead time before the Nomination process has been approved and activated, the development team has left a single testing Nomination in the database so that users may try-out the Endorsement process. It can be found quickly by going to Browse and then selecting 'Current Nominations' in the drop-down list. The Endorsements are located on the last tab.

Infrastructure Updates: Implementation of the Nominations and Endorsements functionality required extensive updates to the CBME database and User Authentication services. This work will be most noticeable when reviewing the details of a Nomination.

Data Updates: Data from 12 documents were added to the database. This resulted in 7 new materials, 8 new challenges, and 1405 new test entries. New test entry total is 51,387.

CBME Metrics

Category	Number
Materials in Database:	564
Challenges in Database:	272
Test Entries:	51387
Nominations:	1
Test Locations:	7

What's New section lists the most recent updates to the database

CBME Metrics on Homepage

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Currently there are over 560 materials, 51,000 test entries and 270 challenges entered in the CBME

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Reference Documents on Homepage

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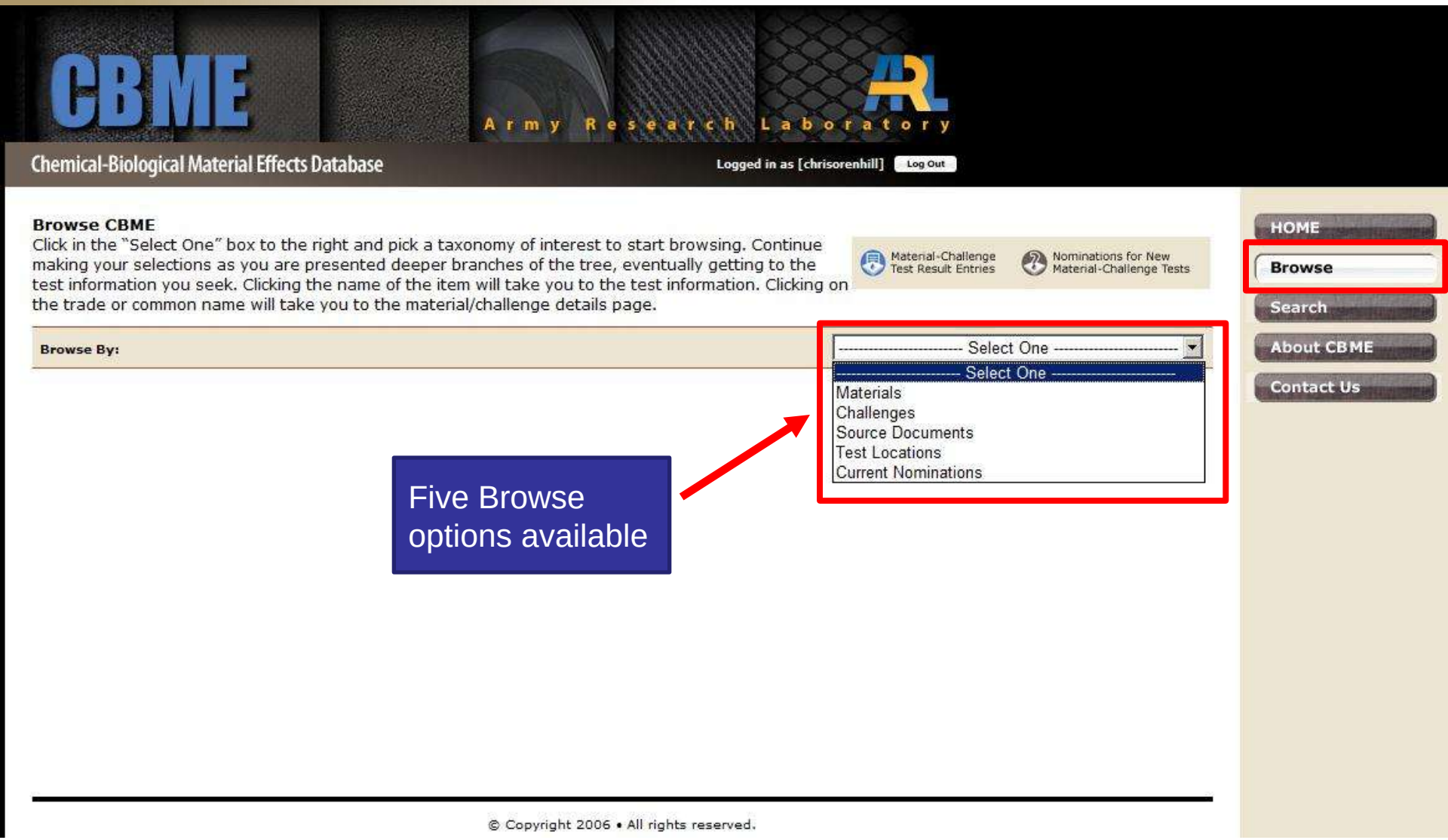
Documents Available for Download

CBME Information Pamphlet
Material Effects Testing TOP 8-2-502
CBME Test Data Template
DoD Military Handbook 784 (140 MB)
Multiservice CBRN Decontamination Manual
CBME User Manual

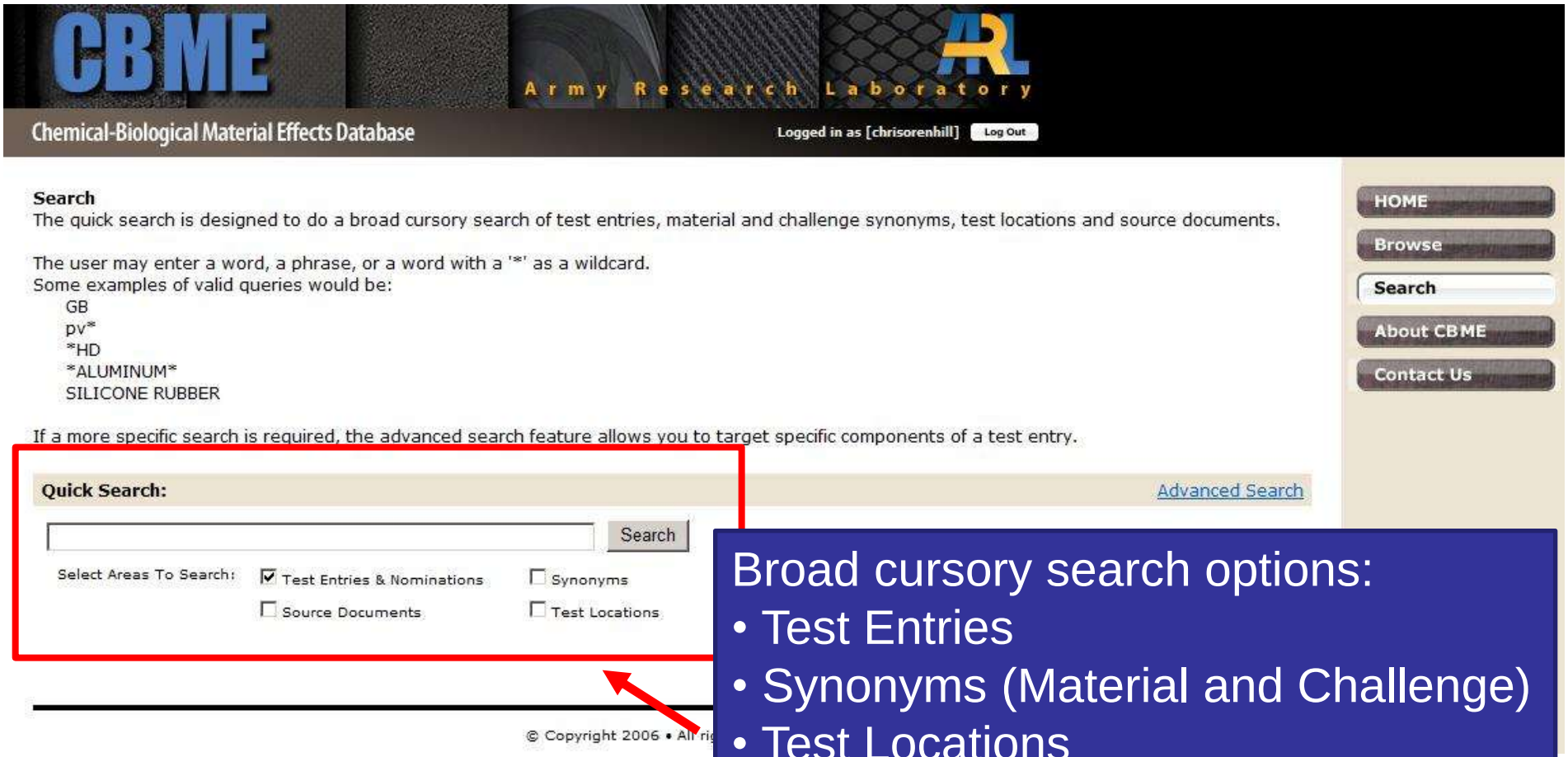
Reference documents are available for download

Browse Feature



Five Browse options available

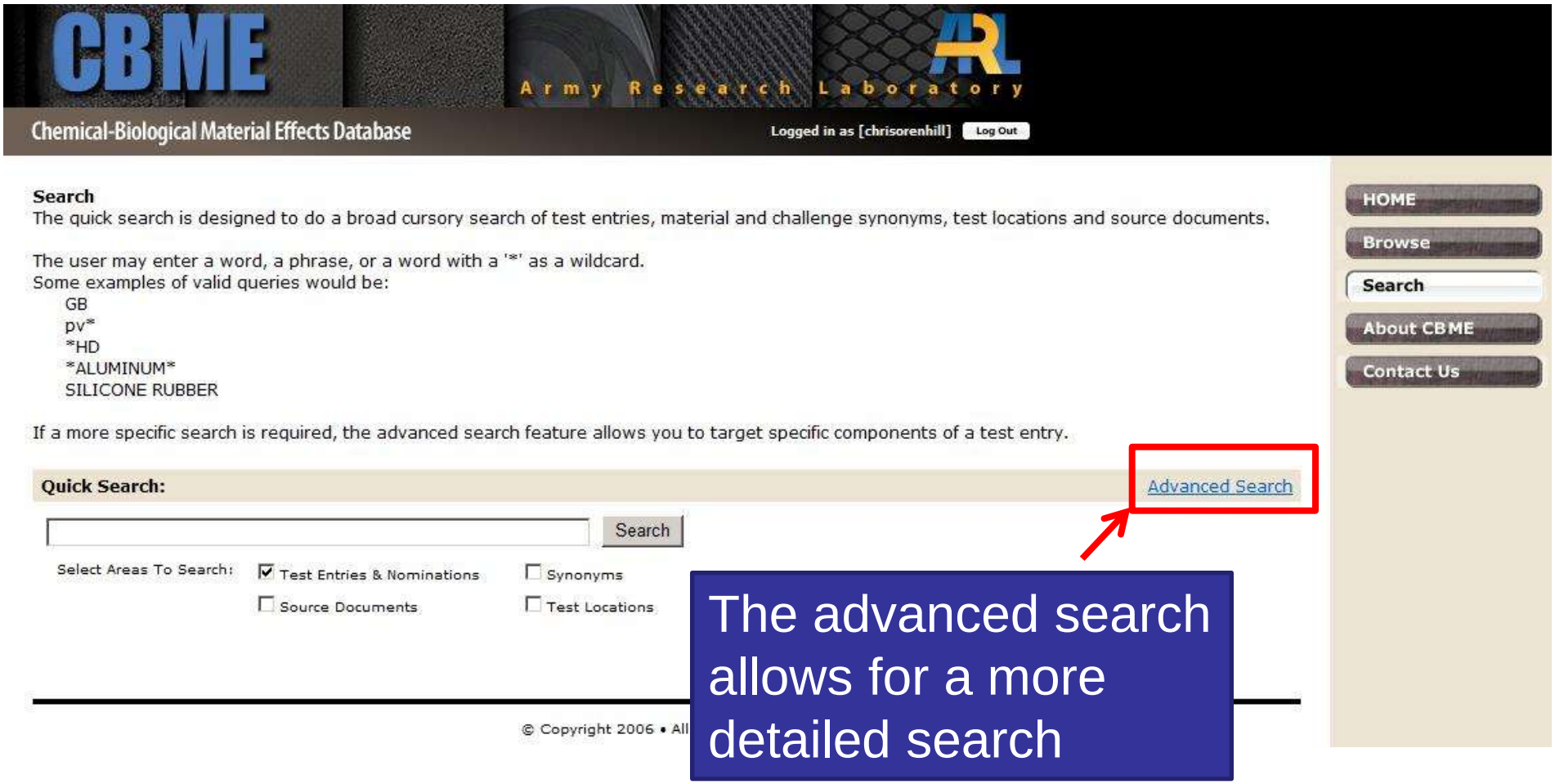
Quick Search Feature



Broad cursory search options:

- Test Entries
- Synonyms (Material and Challenge)
- Test Locations
- Source Documents

Advanced Search Feature



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Advanced Search Feature

Search

The powerful tools in the advanced search allow you to build complex searches by connecting new and historical statements together. Statements can focus your search to materials, challenges, and properties. Stringing statements together into one query can target your search to test entries that are extremely focused towards a specific goal. If more general information is desired, fewer statements can be used or the Quick Search feature can be employed.

Steps for building a query:
1) Select the taxonomy from the drop-down box.
2) Enter a word, a phrase, or a word with a '*' as a wildcard. (click Legal Values to view available search terms)
3) Press the Add button to add the fragment to the Current Query box.
4) Preview search results by clicking the Preview button, or click Search button to view the list of Test Entries that match this query.

You can continue to build up more complex searches by adding new fragments (repeat steps 1-3). Select the appropriate logical operator (AND, OR) to join the new fragment to the Current Query. You can also combine results of previous searches by using the Recent Queries table. Click on the query # to post it to the Current Query box. The currently selected operator will be added to any search string already in that box.

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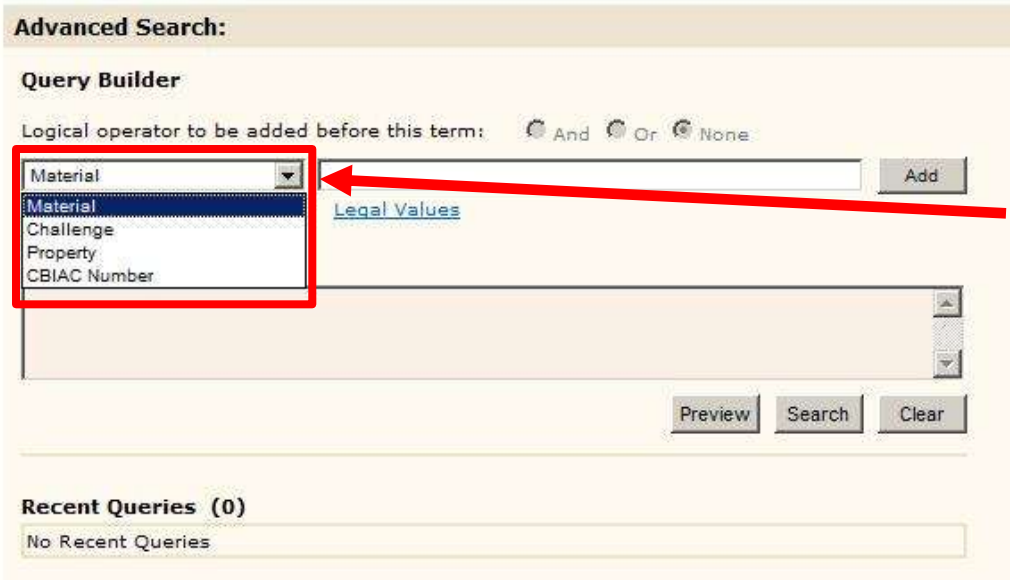

The advanced search allows the user to search for a specific Material, Challenge, Property change, and/or the CB Document Identification Number of interest.

Advanced Search Feature – Sample Search

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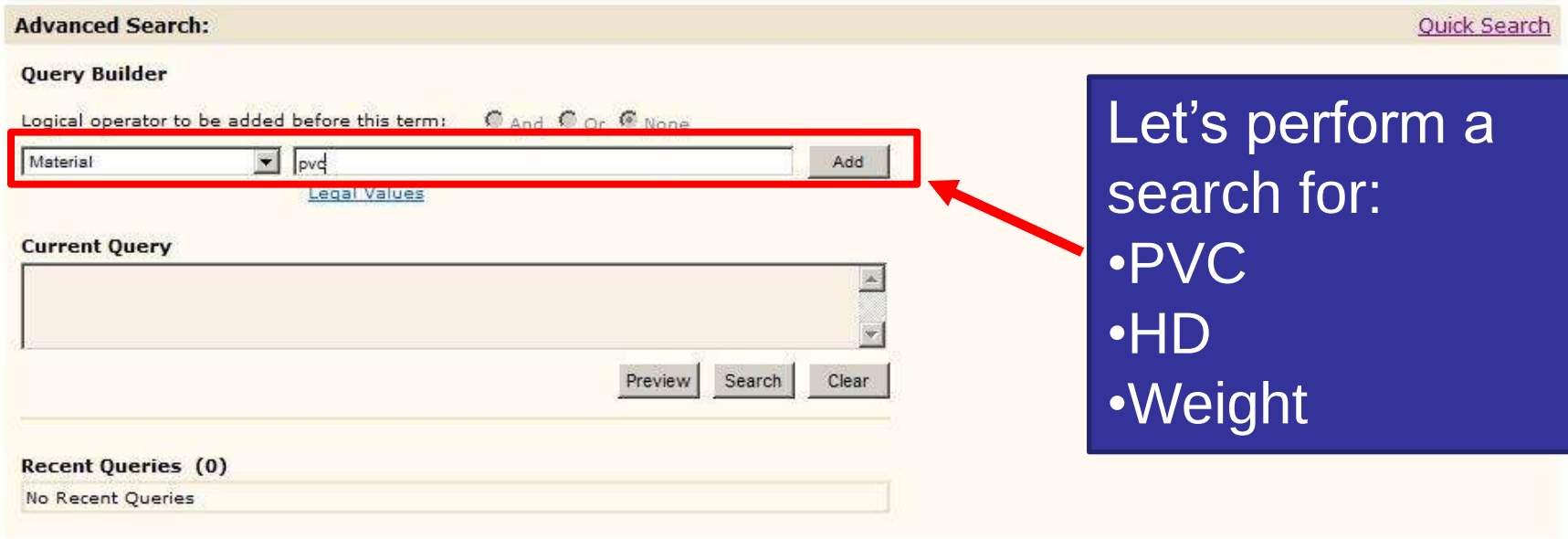

Let's perform a search for:
- PVC
- HD
- Weight

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Advanced Search Feature – Sample Search

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Advanced Search:

Query Builder

Logical operator to be added before this term: And Or None

Property

Legal Values

Current Query

Preview

Recent Queries (2)

ID	Search String	Record Count
#1	Material[pvc]	605
#2	Challenge[hd]	18138

https://cbme.cbrniac.apgea.army.mil/?area=PRP - Properties List - Windows Internet Ex

Properties

Property Type	Property Na
Agent Effects	Absorption Capacity
Agent Effects	ABSORPTION RATE
Agent Effects	ADSORPTION
Agent Effects	BREAKTHROUGH PERCEN
Agent Effects	BREAKTHROUGH TIME
Agent Effects	CUMULATIVE DESORPTIO
Agent Effects	CUMULATIVE DESORPTIO
Agent Effects	CUMULATIVE PENETRATI
Agent Effects	CUMULATIVE PERCENT P
Agent Effects	CUMULATIVE PERMEATI
Agent Effects	DECONTAMINANT RECO
Agent Effects	DESORPTION RATE
Agent Effects	DESORPTION RATE 99%
Agent Effects	EVAPORATION RECOVER
Agent Effects	EXTRACTABLES (WEIGHT
Agent Effects	INTEGRITY
Agent Effects	OFF-GAS FLUX
Agent Effects	PENETRATION RATE
Agent Effects	PERCENT PENETRATION
Agent Effects	PERMEABILITY
Agent Effects	PERMEATION RATE
Agent Effects	PRESSURE CHANGE
Agent Effects	VOLUME
Agent Effects	VOLUME RESISTIVITY
Agent Effects	WEIGHT
Agent Effects	Weight Loss
Agent Effects	Weight Percent Absorbed Sorption
Electrical Properties	ARC RESISTANCE
Electrical Properties	DIELECTRIC CONSTANT

A 'Legal Values' link is available which lists all database entries for materials, challenges, properties, and CBIAC Numbers

Note: Legal Values helps to guide the user to the correct terminology for the material, challenge, property, or CBIAC number of interest

Advanced Search Feature – Sample Search

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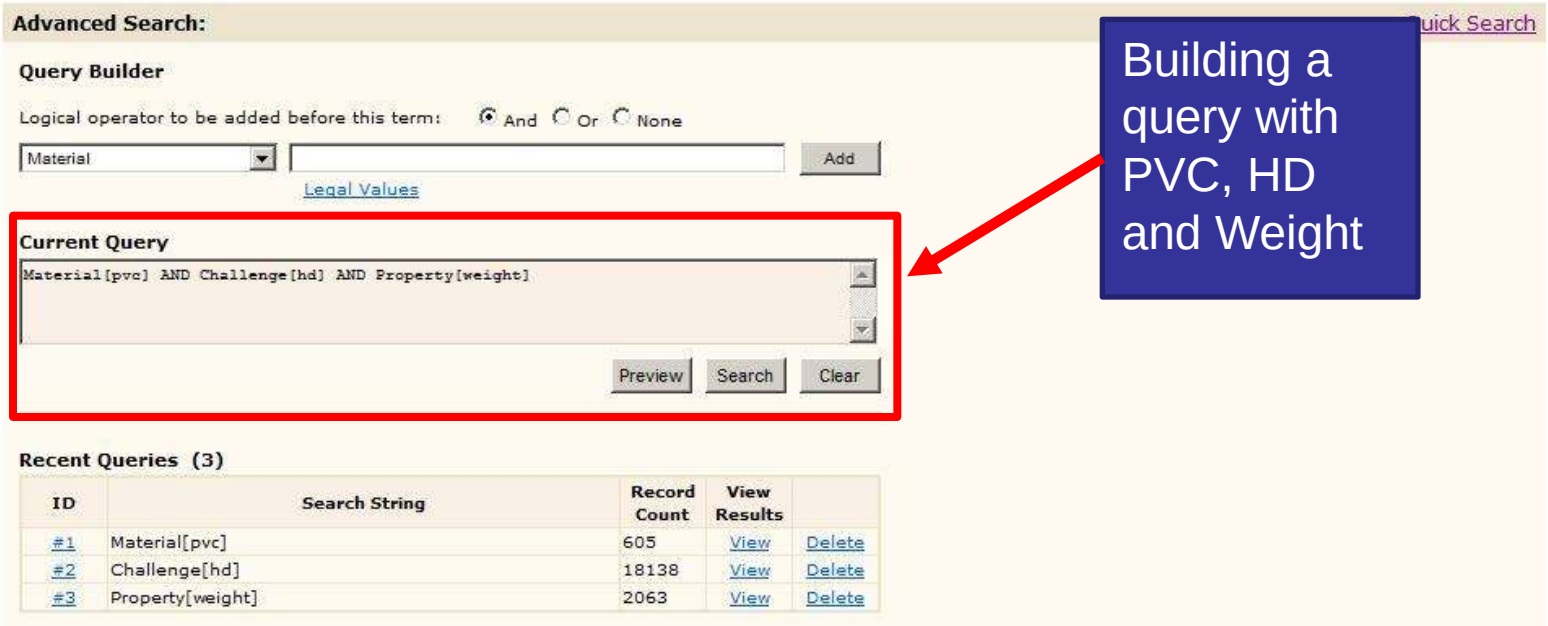

Building a query with PVC, HD and Weight

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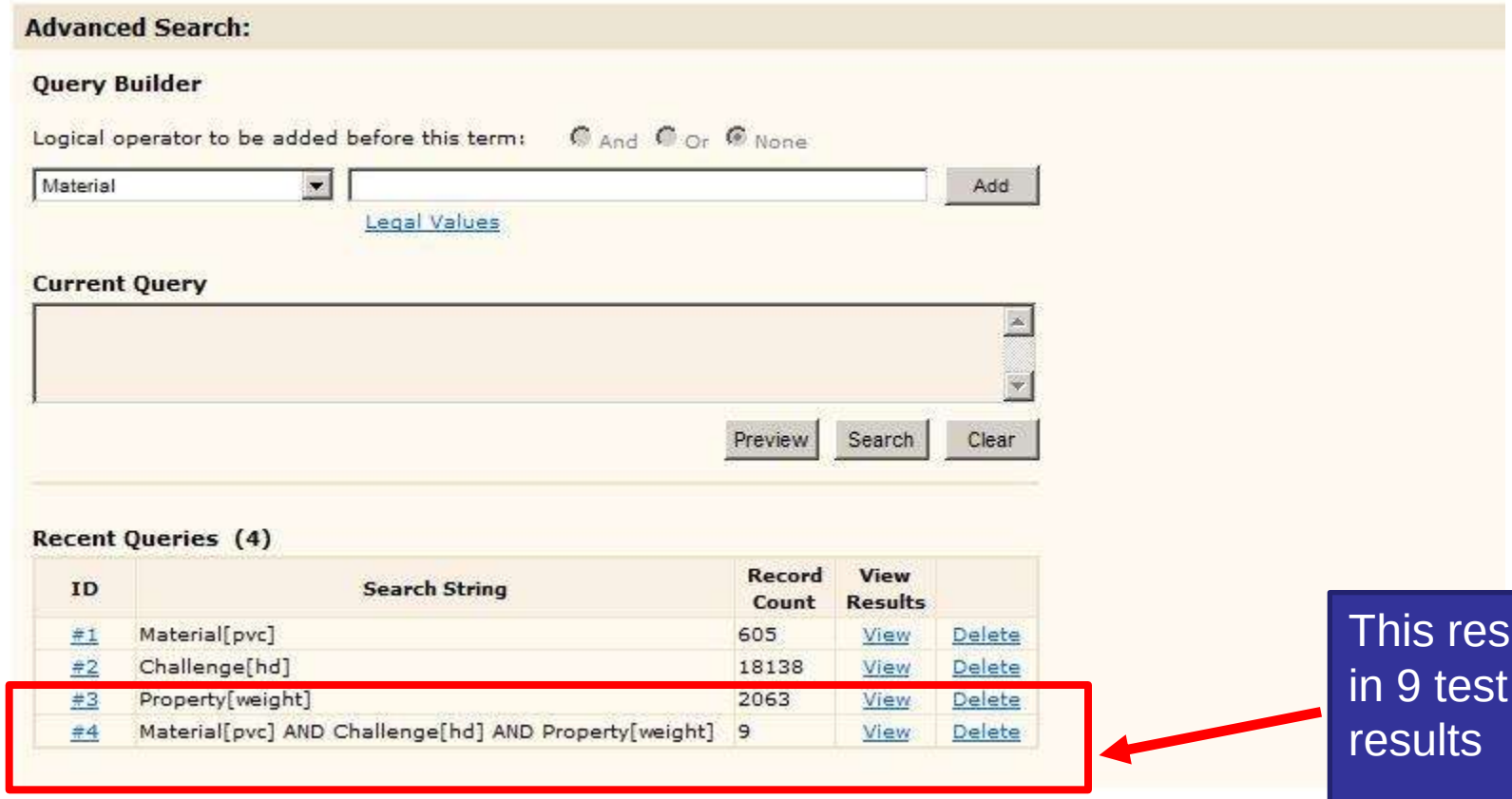
Advanced Search Feature – Sample Search



This results in 9 test results

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Viewing Search Results

Current Query...
Material[pvc] AND Challenge[hd] AND Property[weight]

SEARCH RESULTS

Export Results ▾ Show Options

Row Count: 9

	Type	Material	Challenge	Property	Property Value	Percent Change	Date
View Details		PVC	HD	WEIGHT		207%	Feb 01, 1981
View Details		PVC	HD	WEIGHT		204.2%	Feb 01, 1981
View Details		PVC	HD	WEIGHT		417.9%	Feb 01, 1981
View Details		PVC	HD	WEIGHT		68.9%	Feb 01, 1981
View Details		PVC	HD	WEIGHT		284.2%	Feb 01, 1981
View Details		PVC	HD	WEIGHT		307%	Feb 01, 1981
View Details		PVC	HD	WEIGHT		159.7%	Feb 01, 1981
View Details		PVC	HD	WEIGHT		180.1%	Feb 01, 1981

Viewing Search Results

Current Query...
Material[pvc] AND Challenge[hd] AND Property[weight]

SEARCH RESULTS

Export Results | Show Options

Columns: Property Value | % Change | Date

Display: ...inations Both

Refresh Results | Restore Defaults

Row Count: 9

	Type			Property	Property Value	Percent Change	Date
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View Details		PVC	HD	WEIGHT			Feb 01, 1981
View Details		PVC	HD	WEIGHT			Feb 01, 1981
View Details		P					Feb 01, 1981
View Details		P				180.1%	Feb 01, 1981

Property Value
% Change
Date
CBIAC Number
Test Procedure
Material Type
Material Category
Material Sub-Category
Challenge Type
Challenge Category
Property Type
Material Trade Name
Exposure State
Exposure Conditions
Exposure Temp.
Exposure Time
Data Remarks

Results columns can be changed to allow user to see the result that they are looking for.

Individual results can be viewed by selecting the view details.

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Viewing Search Results

Test Details for...
PVC : HD : WEIGHT

Test Description | Test Data | Material | Challenge | Property | Source

TEST DESCRIPTION

Test Description

Specimen Prep Method:	
Specimen Type:	SEE MATERIAL SPECIFICATION TABLE
Specimen Dimensions:	SAMPLES WERE EITHER 1 x 2 cm OR 1 x 2 INCH SECTIONS.
Specimen Count:	SEE TEST PROCEDURE SECTION. THIS FIELD WAS NOT AVAILABLE IN ORIGINAL DATABASE
Specimen Pre-Conditions:	SAMPLES WERE RINSED WITH METHANOL THEN BLOTTED DRY.
Test Equipment:	SMALL SECTIONS WERE TESTED IN GLASS TEST TUBES; LARGE PLASTIC SECTIONS WERE TEST
Test Procedure:	(U): SMALL PLASTICS SECTIONS WERE IMMERSED IN 2 ML TEST SOLVENT; LARGE PLASTIC SEC TEST TEMPERATURES: 23, 35 AND 50 C. EXPOSURE PERIODS: 1, 6 AND 24 HRS. PROPERTIES TE MATERIAL. NUMBER OF SAMPLES:3 (BLANKS NS). TEST TUBES WERE PLACED IN THERMOSTATIC ROUND-BOTTOM FLASKS WERE PLACED IN A THERMOSTATICALLY CONTROLLED CIRCULATING W AND TEST PLASTICS WERE REM
Exposure State:	LIQUID
Exposure Conditions:	IMMERSED
Exposure Temperature:	23.00
Exposure Time:	24.00
Exposure Remarks:	

Material - As Tested

Material Name:	PVC
Material Trade Name:	POLYVINYLCHLORIDE
Material Treatments:	
Material Form:	

More detailed results can be viewed by selected different tabs. The source document can also be seen by selecting a link on the source tab.

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Viewing Search Results

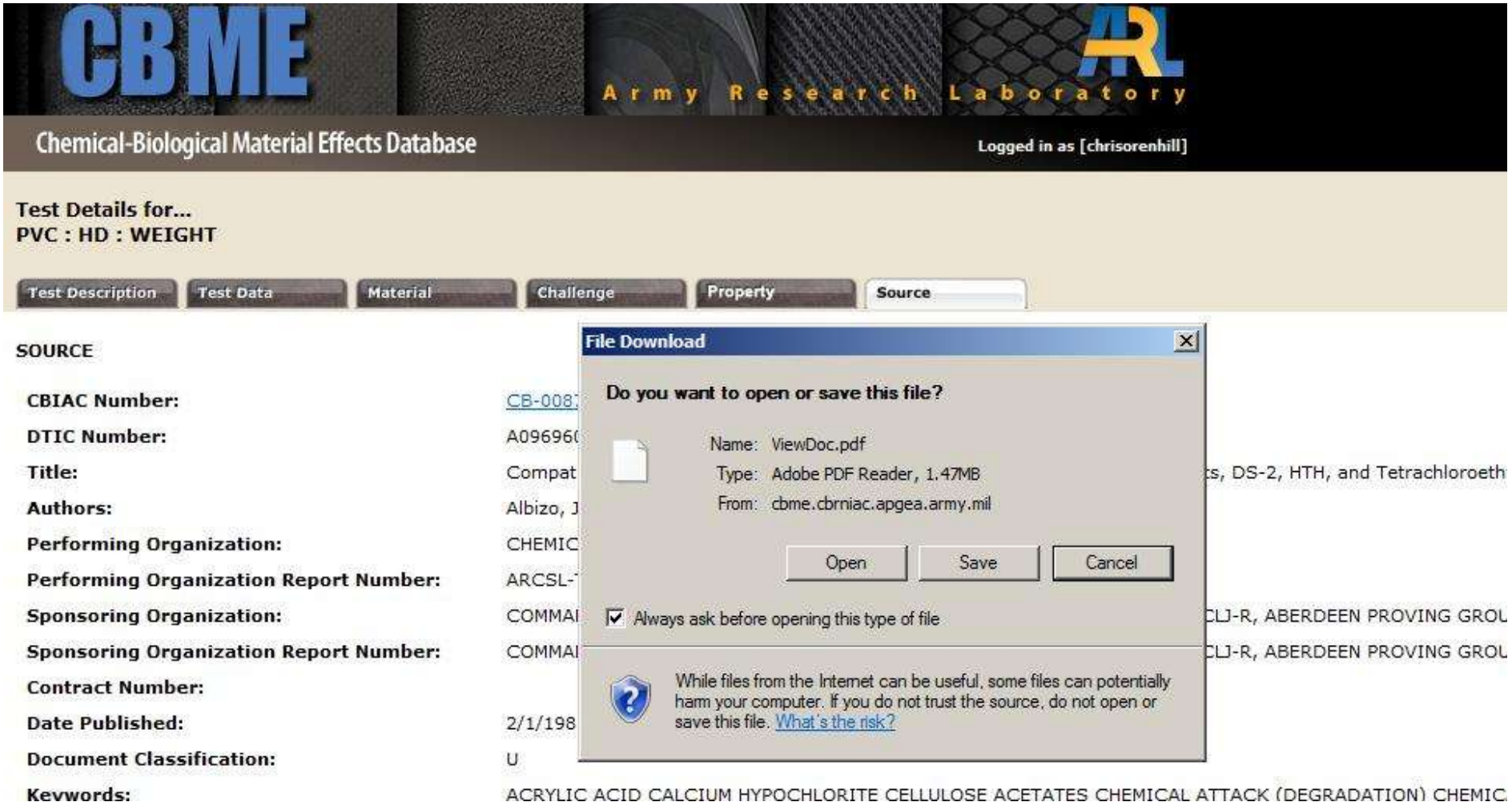
Test Details for...
PVC : HD : WEIGHT

Test Description | Test Data | Material | Challenge | Property | Source

SOURCE

CBIAC Number:	CB-008776
DTIC Number:	A096960
Title:	Compatibility of Plastics with Mustard (HD), Thiodiglycol, VX Hydrolysis Products, DS-2, HTH, and Tetrachloroetl
Authors:	Albizo, Johnnie M. Davis, George T. Quinn, Harry S. Niitsuma, Betty J.
Performing Organization:	CHEMICAL SYSTEMS LABORATORY, ABERDEEN PROVING GROUND, MD
Performing Organization Report Number:	ARCSL-TR-80069
Sponsoring Organization:	COMMANDER/DIRECTOR, CHEMICAL SYSTEMS LABORATORY, ATTN: DRDAR-CLJ-R, ABERDEEN PROVING GRO
Sponsoring Organization Report Number:	COMMANDER/DIRECTOR, CHEMICAL SYSTEMS LABORATORY, ATTN: DRDAR-CLJ-R, ABERDEEN PROVING GRO
Contract Number:	
Date Published:	2/1/1981 12:00:00 AM
Document Classification:	U

Viewing Search Results



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UNCLASSIFIED

SECURITY CLASSIFICATION OF THIS PAGE (When Data Entered)

REPORT DOCUMENTATION PAGE	READ INSTRUCTIONS BEFORE COMPLETING FORM
1. REPORT NUMBER: ARCSL-TR-80069 / 2. GOVT ACCESSION NO.: AD-A096 960	3. RECIPIENT'S CATALOG NUMBER:
4. TITLE (and Subtitle): COMPATIBILITY OF PLASTICS WITH MUSTARD (HD), THIODIGLYCOL, VX HYDROLYSIS PRODUCTS, DS-2, HTH, AND TETRACHLOROETHYLENE	5. TYPE OF REPORT & PERIOD COVERED: Technical Report October 1979-March 1980
	6. PERFORMING ORG. REPORT NUMBER:
7. AUTHOR(s): Johnnie M. Albizo, George T. Davis, Harry S. Quinn, Betty J. Niitsuma	8. CONTRACT OR GRANT NUMBER(s):
9. PERFORMING ORGANIZATION NAME AND ADDRESS: Commander/Director, Chemical Systems Laboratory ATTN: DRDAR-CLB-CA Aberdeen Proving Ground, Maryland 21010	10. PROGRAM ELEMENT, PROJECT, TASK AREA & WORK UNIT NUMBERS: Task 1L162706A553 Technical Area 3-5
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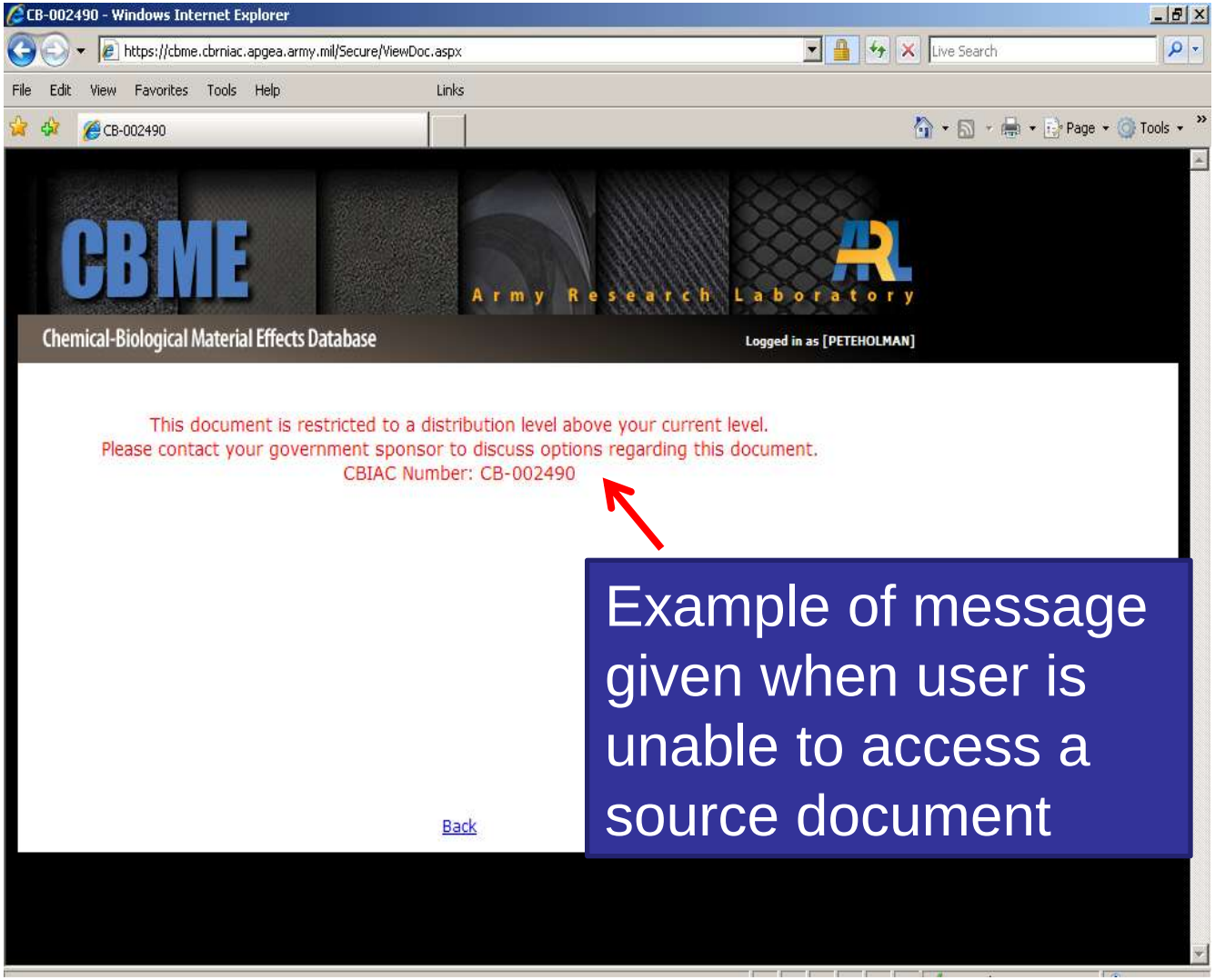

TECHNOLOGY DRIVEN. WARFIGHTER FOCUSED.

Exporting Search Results

Current Query...
Material[pvc] AND Challenge[hd] AND Property[weight]

SEARCH RESULTS

Export Results

- Currently Displayed Columns
- Full Summary

Co [redacted] % Change Date

Display: Test Entries Nominations Both

	Type	Material	Challenge	Property	Property Value	Percent Change
View Details		PVC	HD	WEIGHT		207%
View Details		PVC	HD	WEIGHT		204.2%
View Details		PVC	HD	WEIGHT		417.9%
View Details		PVC				
View Details		PVC				
View Details		PVC				
View Details		PVC				
View Details		PVC				

Results can be exported into a .CSV file, which can be opened with Excel.

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Exporting Search Results

C14

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q
1	Type	Material	Challenge	Property	Property V	% Change	Date	CBIAC Nu	Test Proc	Material T	Material C	Material S	Challenge	Challenge	Property T	Material T	Exposure
2	TE	PVC	HD	WEIGHT		207%	02/01/198	CB-00877	(U): SMA	Plastics	Thermopla		Chemical	Blister Ag	Agent Effe	POLYVIN	LIQUID
3	TE	PVC	HD	WEIGHT		204.20%	02/01/198	CB-00877	(U): SMA	Plastics	Thermopla		Chemical	Blister Ag	Agent Effe	POLYVIN	LIQUID
4	TE	PVC	HD	WEIGHT		417.90%	02/01/198	CB-00877	(U): SMA	Plastics	Thermopla		Chemical	Blister Ag	Agent Effe	POLYVIN	LIQUID
5	TE	PVC	HD	WEIGHT		68.90%	02/01/198	CB-00877	(U): SMA	Plastics	Thermopla		Chemical	Blister Ag	Agent Effe	POLYVIN	LIQUID
6	TE	PVC	HD	WEIGHT		284.20%	02/01/198	CB-00877	(U): SMA	Plastics	Thermopla		Chemical	Blister Ag	Agent Effe	POLYVIN	LIQUID
7	TE	PVC	HD	WEIGHT		307%	02/01/198	CB-00877	(U): SMA	Plastics	Thermopla		Chemical	Blister Ag	Agent Effe	POLYVIN	LIQUID
8	TE	PVC	HD	WEIGHT		159.70%	02/01/198	CB-00877	(U): SMA	Plastics	Thermopla		Chemical	Blister Ag	Agent Effe	POLYVIN	LIQUID
9	TE	PVC	HD	WEIGHT		180.10%	02/01/198	CB-00877	(U): SMA	Plastics	Thermopla		Chemical	Blister Ag	Agent Effe	POLYVIN	LIQUID
10																	
11																	
12																	
13																	

Once the data is in Excel, the user can manipulate and sort the data as desired

TECHNOLOGY DRIVEN. WARFIGHTER FOCUSED.

CBME Database

Demonstration

Conclusion

CBME database enables users to:

- Easily search for CB effects on materials
- Customize search results
- Download
  - Source documents
  - Results for further evaluation

US ARMY RDECOM

CBME Database

Questions