HazRAE

Chem/Bio/Rad/WMD
Decision Support Application

The Most Advanced Third Generation
Mobile Chem/Bio/Rad Response System Available

Quick Reference

www.raesystems.com

P/N 055-4002-000 Rev. C

HazRAE Quick Reference

iPAQ Pocket PC Operation

Important Safety Information

This product is not designed for use in flammable or potentially flammable environments. Do not operate this product in locations where flammable or explosive gases exist or may be present. Do not remove the battery or connect/disconnect any external power supply in hazardous locations where flammable or explosive gases exist or may be present. Failure to follow these instructions may result in fire, explosion, bodily injury, or death.

Further Safety & Operational Information

Consult the documentation that accompanied your iPAQ Pocket PC for more detailed descriptions of safety notices, as well as product functions, care, and support.

Consult the accompanying HazRAE in-depth documentation for more detailed information on HazRAE's features and operation.

Care of the iPAQ Pocket PC

- Always use the stylus to make selections. Other objects may damage the iPAQ Pocket PC display.
- Never clean the screen with water. Use cleaner designed for LCD displays.

Charging the iPAQ Pocket PC

1. Connect your AC adapter to the iPAQ Pocket PC's Universal Connector.
2. Plug your AC adapter into a live AC outlet.

A full charge takes 4 hours. Plugging in the AC adapter turns on the HP iPAQ Pocket PC. If the unit does not turn on, lightly press the Reset button with the tip of the iPAQ Pocket PC's stylus.

Important! To maintain a full battery charge, leave your iPAQ Pocket PC on its charger when not in use.

Turning on the iPAQ Pocket PC

Turn on your iPAQ Pocket PC by pressing the Power On/Off button on the top of the iPAQ Pocket PC.

Checking Battery Level

To check your batteries' remaining power:

Start ► Settings ► System tab ► Power

Tap OK to exit.

Calibrating the iPAQ Pocket PC's Screen For Accurate Input

Calibrate your iPAQ Pocket PC for stylus input accuracy:

Start ► Settings ► System tab ► Screen ► Align Screen

Tap your stylus on the five targets as precisely as possible.
Tap OK to exit.

Starting HazRAE

1. Tap START with your stylus to bring up the Programs menu.
2. Tap PROGRAMS.
3. Tap HAZRAE. The application starts in approximately 5 seconds.

iPAQ Pocket PC Layout And Functions

Operating HazRAE on the iPAQ Pocket PC requires knowing only a few of the iPAQ Pocket PC's features. Note the locations of the power on/off switch, power LED, stylus storage, and the points on the screen that are used to show programs (where you select HazRAE) and the OK button, where you Exit screens or

programs. The iPAQ Pocket PC has other buttons and functions, but they do not apply to HazRAE. (For further information, refer to the documentation from HP that accompanies your iPAQ Pocket PC.) Also note, various iPAQ models have their LEDs and on/off and other buttons in other locations.

Windows PC Operation

Starting HazRAE On A Windows PC

Double-click the HazRAE icon on your desktop (or go to Start ► Programs ► HazRAE) in order to start HazRAE. It takes a few seconds to initialize, and then it is ready to use.

Starting HazRAE on An iPAQ Pocket PC

Turn on your iPAQ Pocket PC by pressing the Power button. Then:

1. Tap START with your stylus to bring up the Programs menu.
2. Tap PROGRAMS.
3. Tap HAZRAE. The HazRAE Chem/Bio/WMD Decision Support Application starts in approximately five seconds.

Inputting Text On A PC

Simply use the mouse to locate text boxes, and then type in the text using your computer's keyboard.

Support

If you have a problem with your iPAQ (for example, it won't turn on, the display doesn't work properly or appears damaged, etc.): contact Hewlett-Packard's technical support at http://www.hp.com/support or 1-800-652-6672.

If you have a problem with your HazRAE application: If the iPAQ starts up but there is a problem with HazRAE Chem/Bio/WMD Decision Support Application software, refer to the FAQ at http:// www.raesystems.com/hazrae. If you don't find a solution to your software problem there, or if you do not have Internet access, contact RAE Systems Technical Support at 888-723-4800.

First Responder Clues for Detecting Hazardous Materials Presence

When responding to hazardous materials/terrorism incidents, clues are to aid in determining the presence of hazardous materials. Below is a list of some of the available clues, and the areas in which HazRAE supports your positive identification of the material, consistent with recommendations of NFPA 472.

Given this clue	Use this area in HazRAE
Occupancy and/or location	NFPA 704 Aid (under Options)
Markings and colors	Placards (under Options)
Placards and labels	Search Tab or Placards (under Options)
Shipping papers	Search Tab
Senses / Observable indicators	Discovery Tab
Victims with signs/symptoms	S&S Tab

HazRAE Operation (Windows PC & iPAQ Pocket PC)

HazRAE Menu Bar

Under the menu bar labeled HazRAE are three menu headings, **Options**, **Edit**, and **Preplans**. The first five options are most commonly used in association with first-response activities: Placards, NEPA 704 Aid, IED Standoff, IND Standoff, and UK/EU Codes.

Options

Placards (Placard Identification)

Scroll through the list of standard hazardous material placards and view associated guide for any selected placard.

1. General overview of selected placards.
2. Display of placards.
3. Danger selector (Class 1 – Class 9).
4. Guide button calls up the ERG2004 guide page with in-depth explanations, grouped by the following topics, and as a single guide ("Entire Guide" option). Topics are available through the pull-down menu in the upper right corner of the Guide screen.

Health	Isolate
Fire/Explode	Response
Safety	Spill/Leak
Clothing	First Aid
Evacuation	Entire Guide

5, 6. Scroll buttons for navigating through available placards.
7. Return to previous screen.

Road/Rail ID

Use the Road/Rail ID screen to quickly scroll through the list of available road/rail car silhouettes to identify the type of road/rail carrier involved in an incident. It also describes the types of contents typically contained and whether the contents are under high pressure.

1. High-pressure reminder (text over red background color).
2. Drawing(s) of rail car/container.
3. Description of the tank's characteristics and typical contents.
4. Rail or road selector.
5. Guide button takes you directly to the recommended ERG guide page (Orange Section) for the selected silhouette.
6, 7. Scroll buttons to navigate through available silhouettes.
8. Class is a field for inputting information stencilled on the side of a rail car. It provides information on the type of contents and the type of rail car.
9. Go starts a search according to information in Class selector.
10. Return to previous screen.

Container ID

Quickly and easily identify a range of information and threats concerning intermodal containers. Intermodal containers contain codes and markings on their sides and ends that if decoded correctly, and be used to providevarying degrees of situational awareness regarding a given container.

Typical container markings are arranged like this:

1. Owner/Prefix code
2. Serial Number
3. Check Digit
4. Country Code of Container Registration
5. Size and Type Codes

Example of container markings:

1. Drawings of container, showing location of shipper, country, type, and port codes.
2. Shipper code & serial number: Shipper code consists of 4 capital letters, and serial number has 6 numerals.
3. Country and/or type code: 2-character country of registration code; this is optional (not often used on containers after 1996).
4. ISO country/port code: Additional information, not shown in illustration; typically 2 upper-case alphabetic characters followed by another 3 alphabetic characters, like "PK KCT."
5. Overview window shows results of your search.
6. Go starts a search according to input criteria.
7. Clear resets all fields.
8. Return to previous screen.

NFPA 704 Aid

This marking system identifies hazard characteristics of materials at terminal and industrial sites. Tap any number on any of the four diamonds for detailed information.

It can be used in two ways:

1. Check a substance elsewhere in HazRAE and then select the NFPA 704 Aid; the diamonds show the substance's hazard values in the four diamonds.
2. Input a number into any of the four diamonds and find out the hazard.

1. Fire hazard selector (0-4).
2. Health hazard selector (0-4).
3. Reactivity hazard selector (0-4).
4. Special hazard selector (none, acid, alkaline, corrosive, oxidizer, polymerization, use no water, radioactive).
5. Fire hazard synopsis with "?" button for pop-up information.
6. Health hazard synopsis with "?" button for pop-up information.
7. Reactivity synopsis with "?" button for pop-up information.
8. Special hazard information.
9. Return to previous screen.

UK/EU Codes

International response codes used throughout most of the rest of the world. After finding a material using the SEARCH tab, the currently selected material's equivalent is shown in the UK/EU codes (if one is available). **Note:** If no codes are available, the UK/EU Codes option is grayed out and disabled in the Options menu.

Conversions

Convert units for radiation activity and dose, distance, and temperature.

Glossary

HazRAE contains a handy reference to more than 260 common terms and acronyms frequently found associated with hazardous materials.

1. Seven alphabet group tabs:
   - A-C
   - D-F
   - G-J
   - L-N
   - O-Q
   - R-T
   - U-W

   Note: Tap on each Glossary tab to access the first letter entry in that group. Tap repeatedly to advance through the letters in the tab and then return to the first letter.

2. List of terms contained in HazRAE.
3. Definitions of selected terms.

Register

Registration information must be input to ensure HazRAE will remain operational after initial 15 trials.

About

Details of current software version.

Edit Menu

Copy

Copies response onto the system's clipboard for reporting.

CPC on-hand

List of chemical protective clothing in your inventory.

- Reset button.
- Select All button.
- Menu of CPC materials (select zero or more).

Logging Setup

Enables logging of all activities.

Enable accountability logging checkbox.
Operator initials text box.
Operator Comment text box.

Preplans Menu

HazRAE allows you to create libraries of preplans for later use. Preplans are useful for creating various training scenarios, or creating specific plans to be used for given contingency response scenarios.

Save

The agents that you have selected and which are currently available in the recall list are saved as part of your preplan.

Load

Select a preplan from the Preplan Chooser menu. Once you load a preplan, your recall list and protective clothing configuration are automatically updated to reflect the settings stored in the preplan.

Clear Recall

Clear recall allows you to completely clear the current list of recall bookmark entries. This is useful if you want to create a preplan that only contains the specific set of agents that you specify, and nothing more.

Note: Once you clear the recall list, you cannot undo this action. Also note that you cannot save an "empty," and that if the recall bookmark list is empty, then no preplan can be saved.

Agent Refs

Use this menu option of agent-specific reference documents to retrieve agent-specific information for the current material. For instance, your organization may have unique guidance on containment, decontamination, reference materials or cleanup procedures for a specific agent that is not found in HazRAE. This information can be easily made available for use from HazRAE, available whenever you access the specific agent. Depending on whether you are running HazRAE on a PC or an iPAQ, various file types are supported, including Adobe Actobat, text, HTML, Microsoft Word, Excel, and PowerPoint, etc. Refer to the HazRAE User's Guide for more details on creating and maintaining Agent Refs documents.

Local Refs

Use this menu option to retrieve generic reference documents that you have created and which should be available from within HazRAE. Examples: an emergency contact telephone list, NIMS-compliant ICS forms, or a PARS checklist. Files must be stored in text form in a folder on your PC or iPAQ called \G3LocalRefs. Refer to the HazRAE User's Guide for more details on creating and maintaining Local Refs documents.

Search, Discovery, S&S, Mix, Rad, and Blast Tabs

Search Tab

Type in a word (or part of one), a UNNA number, or a CAS number to find information on a substance. This includes biological threats (infectious agents).

1. Text field for inputting name of material.
2. Recall (stores library of most recent materials searched).
3. Go (initiates search on material in text field).
4. Search Results Overview pane with information found during a search.
5. Recall previously searched materials.
6. Intelligent navigation button: Previous material in HazRAE database.
7. Intelligent navigation button: Next material in HazRAE database.
8. Choose View (see 1-Tap Pop Up action menu). Tap any of the materials in the list and then choose from the 1-Tap Pop Up action menu to get further information.
9. Precursor identifier (appears for materials that have dual uses, including components for explosives or for manufacture of heroin/cocaine/methamphetamines).

Tap the Precursor button to access precursor data on a new screen.

Precursor screen includes:

1. Material name.
2. Dual-use material precursor type.
3. Qualities of the material, solubility, and related data.
4. Return to previous screen.

1-Tap Pop Up Action Menu

This menu is dynamically created when selections are made using the SEARCH, DISCOVERY, and S&S tabs. Some or all of the topics below may be included, depending on the type of material and available data.

View Guide
- Health
- Fire/Explode
- Safety
- Clothing
- Evacuation
- Isolate
- Response
- Spill/Leak
- First Aid
- Entire Guide

Isolation Distances
- Small/Large Spill
- Day/Night
- If fire exists, View Guide

Hazard Overview
- 4 windows (info, IDLH, info, Special Hazards)
- AEGLs button (leads to screen on AEGLs)
- MEGs button (leads to screen on MEGs)

Reactive Groups
- Name window
- Associated Reactive group(s) selector
- View selector
  - Flammability
  - Reactivity
  - Toxicity
  - Other characteristics
  - Examples

Material Profile
- General Description/Profile
- Detailed information
- Material Formula

Precursors
- UNNA and CAS number
- Dual use material information

Protective Clothing
- Show on-hand CPC only option
- Garment
- Gloves
- Boots
- Faceshield
- Matrix B (different materials for gear)
- Matrix B results

Respirators
- Overview (name, UNNA, CAS number)
- Respirator type

Reachback

The Reachback feature is found in submenus for Hazard Overview, Material Profile, and EMS-First Aid. When you select Reachback, HazRAE connects via the Internet to bring further information to the screen.

Note: Using Reachback requires that your iPAQ or PC has Internet connectivity.

Tapping this button retrieves additional information for the current agent from authoritative remote databases such as those housed at the U.S. National Institute of Health, the National Library of Medicine, and the National Institute of Standards and Technology.

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1-Tap Pop Up Action Menu

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EMS – Signs/Symptoms

- Name
- Signs/symptoms

EMS – First Aid

- Name
- First Aid selector
  - Emergency Life Support
  - Inhalation
  - Eyes/skin
  - Ingestion
  - Notes
- Data window (reflects choices in First Aid selector)

Discovery Tab

Discovery helps to identify suspect materials using physically observable characteristics.

1. Make selection for Color, Texture, and Odor.
2. Tap **Go**.

Note: You do not have to make selections in all three menus. One or two selections are adequate to start a discovery. However, the more data you provide via the menus, the more specific the search will be.

Important: More than one choice can be made in each menu by tapping multiple characteristics. In addition, the Color menu has choices of modifiers (light, dark, pale, bright), as does the Texture menu (heavier than air, lighter than air, heavier than water, lighter than water, oily, waxy, etc.). These can be used alone or in combination with other attributes to sharpen the focus of a search.

Note: To clear an individual characteristic in a menu, tap a highlighted name to deselect it. To clear an entire menu's choices, tap N/A.

1. Search by: Color ▪ Texture ▪ Odor
2. Go (to search by selected attributes)
3. Number of results pages (1 of 1, 1 of 2, etc.) of matching suspected materials.
5. List of suspected materials.
4. Hit counter, showing number of matches.
5. Data window shows materials that match criteria.
6. Previous page (when more than one page).
7. Next page (when more than one page).
8. Choose View (see 1-Tap Pop Up action menu). Tap any of the materials in the list and then choose from the 1-Tap Pop Up action menu to get further information.
9. Pressing the **Show IDLH** button tells HazRAE to add Imminent Danger to Life and Health (IDLH) exposure amounts before the name of each suspected material (example: 25 mg/m3 POTASSIUM CYANIDE).
   Note: The **Show IDLH** button only appears when IDLH data is available for a material.
10. Reset clears all three selectors and the data window.

S&S (Signs & Symptoms) Tab

Identify unknown hazardous compounds based on medical signs and symptoms observed in someone who has been exposed to a hazardous material.

1. Select observed symptoms via menus:
   Appearance
   Behavior
   Skin
   Eyes
   Respiratory
   Cardiovascular
   Digestive system
   Temperature

   Important: More than one choice can be made in each menu. To clear an individual menu's choices, tap N/A at the top of each menu list. To clear all menus' choices, tap the **Reset** button.

2. Tap the **Go** button.
3. Tap Reset to remove all current selections.
4. You may link to materials in Discovery by tapping this box. It helps to further narrow your search.

When HazRAE finds suspected materials, it lists them. A new menu of suspected materials appears below selected Signs/Symptoms. You now have more choices:

1. Select observed symptoms via pull-down menus.
2. Number of selected symptoms matched out of the total number of selected symptoms (2 of 3, 3 of 4, etc.).
3. **Reset** all selections.
4. **Go**.
5. Data window shows materials that match criteria, with bars indicating probability ranking of best matches (highest probability shown first). Tap any material name and then use the 1-Tap Pop Up action menu to get more details.
6. **Choose View** (see 1-Tap Pop Up action menu).

Mix (Mixtures) Tab

HazRAE can create virtual mixtures of a broad range of substances and model their resulting reactivity, plus it can model potential precursor outcomes.

1. Select agents to (selector):

A. Model Reactivity

2. Window with list of materials you've investigated.
   Note: You can select only two materials in this function.
   Note: Deselect a highlighted material's name by tapping on another material's name, or by tapping the name of a material that is currently highlighted.
3. Resultant Mixture Reactivity window.

or

B. Mix Precursors

2. Window with list of materials you've investigated.
   Note: Any one or more materials in your HazRAE library may be selected for combined outcome prediction.
   Note: Deselect a highlighted material's name and contribution to the outcome by tapping on it.
3. Precursor outcomes
   Color-coded list includes:
   - Chem/WMD (Chemical Weapons/ Weapons of Mass Destruction)
   - Explosives
   - Heroin/Cocaine
   - Meth (Methamphetamines)
   - Unknown

   Pie-chart is color-coded to reflect percentages/probability and material choices when you select one or more from the list of materials.

Note: Precursor outcomes include a number system that indicates a match of a material to a precursor type (Chem/WMD, etc.). Each match counts as one point, and if a material rates as a precursor in multiple categories, one point is added to each corresponding category.

Note: The outcomes list and pie-chart update immediately each time a material in the list is selected or deselected.

Note: If a selected material is not a known precursor, the category Unknown will receive a point.

Rad Tab (Radioisotope Identification)

Identify a broad range of isotopes based on their emission energies, as detected by survey equipment.

1. Select radiation emission type. If it is unknown, select "Unknown."
2. Select radiation energy in keV.
3. Select error in energy reading, in keV/
4. Press the **Go** button.
5. Number of pages of radioisotopes found.
6. Number of radioisotopes matching criteria found.
7. Press the **Reset** button to clear matching list..
8. Matching radioisotope list
9. Previous page.
10. Next page.
11. 1-tap pop up menu for navigating directly to response information
12. Number of matches found by HazRAE.

When 1-tap pop up menu is pulled down, among the options is Isolation Distances, which shows isolation distance based on dosage, time, and amount of radioactive material. There is also a pull-down menu in the lower left corner that selects Dose, Fallout, and Half-Life, in addition to Distance.

Blast Tab

The blast tab contains working aids related to explosive detonations, both conventional and non-conventional improvised nuclear devices. Access IED Standoff, IND Standoff, and Detonator Type pages by selecting from the Blast tab's list and then tapping **Go**.

IED Standoff (Improvised Explosive Devices)

This provides a fast, easy-to-use danger and threat-ring calculator for estimating standoff distances for Improvised Explosive Devices (IEDs). Use the Threat Selector to match a suspected device. The zone map and other information automatically update.

1. Zone map showing:
   - Building Evacuation Distance.
   - Outdoor Evacuation Distance.
   - (both include "?" buttons for definitions of the evacuation information)
2. Threat assessment information window.
3. Threat selector.
4. Estimated weight based on threat description.
5. (TNT equivalent) This gives the equivalent explosive hazard compared to TNT. If you select the "Other" option under "Threat," you can select other explosive materials and view their equivalent hazard information.
6. Return to previous screen.
7. Additive allows including more than one IED.
8. Shows multiple IED components (if "Additive" is checked).

IND Standoff (Improvised Nuclear Devices)

This provides a fast, easy-to-use danger and threat-ring calculator for estimating standoff distances for Improvised Nuclear Devices (INDs). Use the Threat Selector to match a suspected device. The zone map and other information automatically update.

1. Zone map showing:
   - Fireball (ground) Distance
   - Thermal Radiation Evacuation Distance
   - Building Evacuation Distance
2. Threat assessment information window.
3. Improvised Nuclear Device yield (in kilotons).
4. Evacuation Distances update button.
5. Fatalities (pops up Direct Fatalities calculator).
6. Return to previous screen.

Detonator Identification

HazRAE contains powerful detonator identification capabilities for over 300 brands of commercial and military detonators, encompassing a range of over 7,000 detonators.

1. Detonator type selector.
2. Manufacturer.
3. Category selector to choose applicable type of detonator.
4. Property employs two pull-down menus. The first selects the property and the second selects attributes.
5. Number of pages matching the detonators (up to 50).
6. Displays the total number of detonators that match criteria from selections in 1, 2, 3, and 4.
7. Reset returns all settings to default settings.
8. Go tells HazRAE to search using the selected criteria.
9. Displays the full set of properties and attributes associated with the detonator selected in 9.

10, 12. Select previous or next detonator in HazRAE's library.

11. Refine multiple search results for complex queries.
13. Return to previous screen.

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