Develop an exercise to use a mobile app

Developer Guide

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Acknowledgments

A <u>mobile app</u>, or simply <u>app</u>, is a specialized program – or <u>app</u>lication – downloaded onto mobile devices. The Midwest Consortium developed this template for Program Directors and facilitators who want to develop an exercise to use an app that is then added to the MWC programming. The development and training are conducted under cooperative agreement number U45 ES 06184 from the National Institute of Environmental Health Sciences.

See https://mwc.umn.edu for a listing of contacts at each member institution of the Midwest Consortium for additional information about our organization and other training. We encourage you to comment on these materials.

Warning

This is not a 'use now for training' facilitator guide; rather the next pages include the approach to developing an exercise using an app. When complete, it may be used, then revised and the Program Director at your training center will send it to the MWC, so that others may use it. In this way, we will increase the apps training materials available across the Midwest Consortium centers.

The Developers

Mobile app exercises and the primary developers are shown below:

Using the NIOSH Pocket Guide mobile app - University of Minnesota

<insert as exercises are developed>

Efforts to develop each is gratefully acknowledged by everyone in the Midwest Consortium.

Contents

Develop an Exercise to use an app: Select, Develop, Share

Materials

- ERG app exercise (Participant Guide, Facilitator Guide)

- App you want to use

- Template for Participant Guide

- Summary of Bloom's Taxonomy (for writing learning objectives)

- Examples of an Exposure Scenario

- Examples of a Worksheet

- Template for Facilitator Guide

Approach

Select

- Conduct reconnaissance:

  What hazards are of interest to this group?
  How frequently do the participants use the app?
  What types of stimuli are reasonable for the group?
  Do participants use the resource in hard copy or digital?
  What is the work schedule – day or night or variable?
  What sampling equipment is available or might be used by others who would provide input during a response?
  Has there been a response during the past year – to what, and other details?
  Obtain any needed supporting written plans for the group (contract program only)

- Review selected app and justification from reconnaissance with Program Director for use in the overall program for the participant group

Develop

- Review ERG exercise for format and content/guidance

- Develop Learning Objectives (see Bloom resource)

- Develop Exposure Scenario (see Examples of Exposure Scenarios)

  A good exposure scenario is a description of use or release of a compound of interest to the group.

- Develop Worksheet (s) (see Examples of Worksheets)

  A good Worksheet is a listing of relevant information – it is always more useful at the end of the app use to have information written down, and that requires space to write it!

- Complete Participant Guide from the Participant Template provided

- Complete Facilitator Guide from the Participant Template provided

- Pilot with one or more persons not involved in development

- Revise

- Use in training

- Revise, as needed

Share

- Forward to Midwest Consortium for use by others

Bloom's Taxonomy for writing Learning Objectives

- Knowledge (recall of specific information)
  Key words: define, describe, identify, label, list, match, recognize, name
  Measure:
    Exam: multiple choice, matching, fill-in, other regurgitation method, or verbal exam
  Example: know if a TLV is the enforceable exposure limit

- Comprehension (use information in a predictable way)
  Key words: translate, convert, defend, distinguish, estimate, explain, give examples
  Measure:
    Exam: word problem with calculation or selection of alternatives, open-ended question, or verbal exam; with documentation sheet of objective criteria
    Report: graded with specific criteria for evaluation
  Example: distinguish between the three most-used exposure guidelines

- Application (use information in an abstract situation)
  Key words: change, compute, demonstrate, discover, manipulate, predict, show
  Measure:
    Exam: word problem with calculation or selection of alternatives, open-ended question, or verbal exam; with documentation sheet of objective criteria
    Report: graded with specific criteria for evaluation
  Example: for a compliance inspection, select the exposure guideline that would be used.

- Analysis (organize information or situation into logical elements)
  Key words: diagram, discriminate, illustrate, infer, relate, select
  Measure:
    Exam: word problem with calculation or selection of alternatives, open-ended question, or verbal exam; with documentation sheet of objective criteria
    Report: graded with specific criteria for evaluation
  Example: explain why TLV/PEL/REL values are different for a specific compound

- Synthesis (putting the parts together)
  Key words: categorize, combine, compose, summarize
  Measure:
    Report: graded with specific criteria for evaluation
    Exam: verbal exam, with documentation of objective criteria
  Example: present reasons why TLV/PEL/REL might be used

- Evaluation (make judgments)
  Key words: appraise, compare, conclude, explain, support, justify
  Measure:
    Report: graded with specific criteria for evaluation
    Exam: verbal exam, with documentation of objective criteria
  Example: justify selection of TLV/PEL/REL for an exposure situation

Example #1 of an Exposure Scenario Description: edit for the app to be used

Exposure Scenario development worksheet

Factor	Initial Condition	Stimulus #1	Stimulus #2
Weather conditions			
Topography			
Surrounding vegetation, Waterways, highways, drains			
Vulnerable populations in the area			
Time of event			
Mode(s) of Transportation Involved			
Exact location			
Hazardous material(s)			
Quantity released or release rate			
Quantity not initially released			
Fire?			
Incompatibles nearby			
PPE needed			
Air concentrations reported			

Example #2 of an Exposure Scenario Description: edit for the app to be used

There is potential exposure to <u><enter a chemical name here></u> and you have been tasked to find out information as quickly as possible about health effects and protective measures.

Example #3 of an Exposure Scenario Description: edit for the app to be used

You have been assigned and fit-tested for a full-face APR by your employer. In the following two situations, determine whether you will have adequate protection working in the Hot Zone. Working in groups, identify exposure limits and guidelines and other needed information to make a decision. Note reasons for your answers when completing the Worksheet.

Scenario 1

The industrial hygienist has made a reading of 750 ppm of methyl chloride. Should you feel safe wearing your full-face APR into the Hot Zone? Explain your answer

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Scenario 2

The industrial hygienist has found readings of 200 ppm of N,N-Dimethylaniline in the hot zone. Should you feel comfortable wearing your full-face APR in the Hot Zone? Explain your answer.

Example #1 of Worksheet: edit for app to be used

ERG Worksheet

(Instructor will provide ID number, container type, and time of day for your use on this exercise.)

ID Number: _____

Container: Rail Tank Car ☐ Highway Tank Truck ☐ 150 lb. Cylinder ☐ Drum ☐ Roll-Off Box ☐
Time of Day: 2 a.m. ☐ 2 p.m. ☐ **Wind Speed (if applicable): _____**

Instructions: Using the information in the *Emergency Response Guide*), answer the following questions, providing all significant information.

1. The substance is (you need to give only one name): _____

2. a. The Guide number that should be consulted for more information is: _____

    b. The Guide title is _____

3. The distance to allow for each of the following (feet or miles) is:

    a. Isolation_____ b. Evacuation _____

    [Use low end of range for small release, high end of range for larger release. If the distance cannot be determined or is not given in the Guide*, put "N/A"]*

4. The primary hazard is due to: a. Health ☐ b. Fire ☐

5. Major fire or explosion hazards due to this type of material are (list up to three):

    _____

    _____

    _____

6. Potential health effects from exposure to this material are (list up to three):

    _____

    _____

    _____

7. What respiratory protection is recommended for responses to this material?

    _____

Example #2 of Worksheet: edit for app to be used

Complete this worksheet for a chemical of interest.

Resource used:

Chemical name

NIOSH exposure limits (REL)

OSHA exposure limits (PEL)

IDLH level

Is it a carcinogen?   Yes _____ No _____

List four symptoms of exposure:

1.   2.

3.   4.

Which of these symptoms result from acute exposure?

Are there incompatibilities?

What would you do if it got on your skin? (list)

What parts of the body are affected by exposure?

What is the first aid needed if inhaled?

Example #3 of Worksheet: edit for app to be used

Collect the following information in order to evaluate the possible effects of exposure described in the Scenarios.

<u>Scenario 1</u>

PEL_____   Resource:

IDLH_____   Resource:

APF_____   Resource:

Signs and symptoms of exposure   Resource:

_____ _____

_____ _____

Emergency contact for more information   Resource:

      NOTES:

<u>Scenario 2</u>

PEL_____   Resource:

IDLH_____   Resource:

APF_____   Resource:

Signs and symptoms of exposure   Resource:

_____ _____

_____ _____

Emergency contact for more information   Resource:

      NOTES: