NIOSH Pocket Guide Performance Measure

Time Requirement: 1 hour

Number of Instructors: 1 or more, consistent with ratio in the Minimum Criteria

Materials

- Participant Worksheets, found in this guide
- A NIOSH Pocket Guide (NPG) for each participant
- Whiteboard or equivalent; markers

Objectives

When completed, participants will be better able to:

- Use the NIOSH Pocket Guide to learn about potential hazards associated with workplace chemicals

Suggested Facilitator Preparation

- Review this exercise
- Review the NIOSH Pocket Guide
- Select one of the following chemicals that is relevant to the work situation of the participants

Chemical	Exposure Level
Acetylene	5000 ppm
Anhydrous ammonia	1000 ppm
Caustic soda solution	3 mg/m^3
Chlorine	1 ppm
Dichloromethane	1000 ppm
Dicrotophos	1.0 mg/m^3
Gasoline	100 ppm
Hydrochloric acid	10 ppm
Mercury, metallic	1 mg/m^3
Methyl isobutyl ketone	300 ppm
PCB-containing transformer oil (54% chlorine)	0.0005 mg/m^3
Perchloroethylene	200 ppm
Sodium cyanide	20 mg/m^3
Styrene monomer	500 ppm
Sulfuric acid	5 mg/m^3
Toluene	200 ppm

- Answer keys are found below for all 16 chemicals. Review the answer key for the material you have selected to ensure that it is accurate. If any errors are found, let your Program Director know. Look up any abbreviation or code you are not familiar with.

- Each participant will need a Worksheet and a NPG. Extra Worksheets may be needed if participants want to record the correct answer for their future use.

Conducting the Exercise

- This performance measure is to be completed individually by each participant.
- Review the objective.
- Distribute the Worksheets. Provide the participants with the situation, and have them complete the Worksheet in about 15 minutes.
- Collect the Worksheets for grading.
- Review the correct answers as a class activity. Some participants may wish to have another Worksheet to record the answers.

Grading the Worksheets

Note that an example of a Graded Participant Worksheet is included in this guide.

Review the entries of all participants. Mark a large "X" next to any incorrect answer, including any subparts. For example, Question 4 has eight parts that need to be graded.

What to do after grading the Worksheets

Retain graded Worksheets in the program file. Enter scores on the test score sheet and include with all evaluation materials.

Participant _____

NIOSH Pocket Guide Performance Measure

Facilitator will provide the compound name and exposure level.

Chemical: _____

Measured Exposure Level: _____

Instructions: Answer the following questions, using the information from the NIOSH Pocket Guide; put NA if there is no information available or if the question does not apply to this material.

1. The listed name for this compound is:

   ☐ The name above _____.

2. The compound is found on Pages_____.

3. At room temperature (68ºF) the compound is: ☐ Solid ☐ Liquid ☐ Gas

4. a. The exposure is measured in units of _____.

   b. Complete the following table:

Limit	Numerical Value
NIOSH TWA	
NIOSH ST	
NIOSH C	
OSHA TWA	
OSHA ST	
OSHA C	
IDLH	

5. The fire hazard is: □ Flammable □ Combustible □ Does not burn

6. The chemical *vapor* can be absorbed through intact skin: □ True □ False

7. When should clothing be removed?_____.

8. At the measured exposure level, the *minimum* level of respiratory protection required by NIOSH is _____.

9. The NIOSH printed guidebook recommends eye protection.
□ True □ False

10. If a victim got this on the skin, the guide recommends_____.

11. Damage can occur to the skin if there is direct contact with this substance.
□ True □ False

12. This material may produce mental confusion. □ True □ False

13. This material is a known or probable carcinogen. □ True □ False

14. Some compounds should not be stored near this material without adequate safeguards to prevent mixing. □ True □ False

15. The vapor pressure is _____.

(Example: Graded Participant Worksheet)

Participant _____

NIOSH Pocket Guide Performance Measure

Facilitator will provide the compound name and exposure level.

Chemical: acetylene

Measured Exposure Level: 5000 ppm

Instructions: Answer the following questions, using the information from the NIOSH Pocket Guide; put NA if there is no information available or if the question does not apply to this material.

1.The listed name for this compound is:

☑ The name above ☐ _____.

2. The compound is found on Pages 5.

3. At room temperature (68ºF) the compound is: ☐ Solid ☐ Liquid ☑ Gas

4. a. The exposure is measured in units of ppm.

b. Complete the following table:

Limit	Numerical Value
NIOSH TWA	N/A
NIOSH ST	N/A
NIOSH C	2500
OSHA TWA	N/A
OSHA ST	N/A
OSHA C	N/A
IDLH	N/A

(Use N/A if none shown.)

5. The fire hazard is: ☑ Flammable ☐ **Combustible** ☐ **Does not burn**

6. The chemical *vapor* can be absorbed through intact skin: ☐ True ☑ False

7. When should clothing be removed? When wet.

8. At the measured exposure level, the *minimum* level of respiratory protection required by NIOSH is NA.

9. The NIOSH printed guidebook recommends eye protection.
☑ True ☐ False

10. If a victim got this on the skin, the guide recommends No recommendation.

11. Damage can occur to the skin if there is direct contact with this substance.
☐ True ☑ False ✗

12. This material may produce mental confusion. ☐ True ☑ False

13. This material is a known or probable carcinogen. ☐ True ☑ False

14. Some compounds should not be stored near this material without adequate safeguards to prevent mixing. ☑ True ☐ False

15. The vapor pressure is 44.2 atm.

ANSWER KEYS

Chemical	Acetylene
Use (not in Pocket Guide)	Welding and Cutting
Measured Exposure Level	5000 ppm
Listed Name	Acetylene
Pages	5
State of Matter at Room Temperature	Gas
Exposure Units	ppm
NIOSH Limits - TWA	NA
NIOSH Limits - ST	NA
NIOSH Limits - C	2500
OSHA Limits - TWA	NA
OSHA Limits - ST	NA
OSHA Limits - C	NA
IDLH	NA
Fire Hazard	Flammable
Vapor through Skin	False
Clothing Removal	When wet/ contaminated
Respirator	NA
Eye Protection	True
Skin Cleaning	NR
Skin Damage	True (Frostbite)
Mental Confusion	False
Carcinogen	False
Incompatible/ Reactive	True
VP	44.2 atm
Notes	Main problem is fire.

ANSWER KEYS

Chemical	Anhydrous Ammonia
Use (not in Pocket Guide)	Food processing, fertilizer, transportation
Measured Exposure Level	1000 ppm
Listed Name	Ammonia
Pages	15
State of Matter at Room Temperature	Gas
Exposure Units	ppm
NIOSH Limits - TWA	25
NIOSH Limits - ST	35
NIOSH Limits - C	NA
OSHA Limits - TWA	50
OSHA Limits - ST	NA
OSHA Limits - C	NA
IDLH	300
Fire Hazard	Flammable
Vapor through Skin	False
Clothing Removal	When wet/ contaminated
Respirator	£ScbaF:Pd, Pp/SaF:Pd, Pp:AScba
Eye Protection	True
Skin Cleaning	Water flush
Skin Damage	True
Mental Confusion	False
Carcinogen	False
Incompatible/ Reactive	True
VP	8.5 atm
Notes	

ANSWER KEYS

Chemical	Caustic Soda Solution (50%)
Use (not in Pocket Guide)	Water Treatment
Measured Exposure Level	3 mg/m3
Listed Name	Sodium Hydroxide
Pages	284
State of Matter at Room Temperature	Solid
Exposure Units	mg/m3
NIOSH Limits - TWA	NA
NIOSH Limits - ST	NA
NIOSH Limits - C	2
OSHA Limits - TWA	2
OSHA Limits - ST	NA
OSHA Limits - C	2
IDLH	10
Fire Hazard	Does not burn
Vapor through Skin	False
Clothing Removal	When wet/ contaminated
Respirator	Sa:Cf£/100F/PaprHie£/ScbaF/SaF
Eye Protection	True
Skin Cleaning	Water Flush
Skin Damage	True
Mental Confusion	False
Carcinogen	False
Incompatible/ Reactive	True
VP	0 mmHg
Notes	When in contact with water, it is combustible (pg 284).

ANSWER KEYS

Chemical	Chlorine
Use (not in Pocket Guide)	Water Treatment
Measured Exposure Level	1 ppm
Listed Name	Chlorine
Pages	59
State of Matter at Room Temperature	Gas
Exposure Units	ppm
NIOSH Limits - TWA	NA
NIOSH Limits - ST	NA
NIOSH Limits - C	0.5
OSHA Limits - TWA	NA
OSHA Limits - ST	NA
OSHA Limits - C	1
IDLH	10
Fire Hazard	Does not burn
Vapor through Skin	False
Clothing Removal	NR
Respirator	CcrS*/Sa*
Eye Protection	True
Skin Cleaning	NR
Skin Damage	True (Frostbite)
Mental Confusion	False
Carcinogen	False
Incompatible/ Reactive	True
VP	6.8 atm
Notes	

ANSWER KEYS

Chemical	Dichloromethane
Use (not in Pocket Guide)	Cleaning (metal, plastics)
Measured Exposure Level	1000 ppm
Listed Name	Methylene Chloride
Pages	208
State of Matter at Room Temperature	Liquid
Exposure Units	ppm
NIOSH Limits - TWA	Ca (see appendix A)
NIOSH Limits - ST	NA
NIOSH Limits - C	NA
OSHA Limits - TWA	25
OSHA Limits - ST	125
OSHA Limits - C	NA
IDLH	Ca (2300 ppm)
Fire Hazard	Combustible
Vapor through Skin	False
Clothing Removal	When wet/ contaminated
Respirator	ScbaF:Pd, Pp/SaF:Pd, Pp:AScba
Eye Protection	True
Skin Cleaning	Soap wash
Skin Damage	True
Mental Confusion	False
Carcinogen	True
Incompatible/ Reactive	True
VP	350 mmHg
Notes	

ANSWER KEYS

Chemical	Dicrotophos
Use (not in Pocket Guide)	Pesticide
Measured Exposure Level	1.0 mg/m3
Listed Name	Dicrotophos
Pages	103
State of Matter at Room Temperature	Liquid
Exposure Units	mg/m3
NIOSH Limits - TWA	0.25
NIOSH Limits - ST	NA
NIOSH Limits - C	NA
OSHA Limits - TWA	NA
OSHA Limits - ST	NA
OSHA Limits - C	NA
IDLH	ND
Fire Hazard	Combustible
Vapor through Skin	True
Clothing Removal	When wet/ contaminated
Respirator	NA
Eye Protection	True
Skin Cleaning	Water wash
Skin Damage	True
Mental Confusion	False
Carcinogen	False
Incompatible/ Reactive	True
VP	0.0001 mmHg
Notes	

ANSWER KEYS

Chemical	Gasoline
Use (not in Pocket Guide)	Fuel and transportation
Measured Exposure Level	100 ppm
Listed Name	Gasoline
Pages	151
State of Matter at Room Temperature	Liquid
Exposure Units	Ppm
NIOSH Limits - TWA	Ca (see appendix A)
NIOSH Limits - ST	NA
NIOSH Limits - C	NA
OSHA Limits - TWA	NA
OSHA Limits - ST	NA
OSHA Limits - C	NA
IDLH	NA
Fire Hazard	Flammable
Vapor through Skin	False
Clothing Removal	When wet/ contaminated
Respirator	¥ScbaF:ZPd, Pp/SaF:Pd, Pp, AScba
Eye Protection	True
Skin Cleaning	Soap Flush
Skin Damage	True
Mental Confusion	True
Carcinogen	True
Incompatible/ Reactive	True
VP	38-300 mmHg
Notes	

ANSWER KEYS

Chemical	Hydrochloric Acid
Use (not in Pocket Guide)	Metal Finishing
Measured Exposure Level	10 ppm
Listed Name	Hydrogen Chloride
Pages	167
State of Matter at Room Temperature	Gas
Exposure Units	Ppm
NIOSH Limits - TWA	NA
NIOSH Limits - ST	NA
NIOSH Limits - C	5
OSHA Limits - TWA	NA
OSHA Limits - ST	NA
OSHA Limits - C	5
IDLH	50
Fire Hazard	Does not burn
Vapor through Skin	False
Clothing Removal	When wet/ contaminated
Respirator	CcrS*/GmFS/PaprS*/Sa*/ScbaF
Eye Protection	True
Skin Cleaning	Water flush
Skin Damage	True
Mental Confusion	False
Carcinogen	False
Incompatible/ Reactive	True
VP	40.5 atm
Notes	Is highly corrosive to most metals.

ANSWER KEYS

Chemical	Mercury, metallic
Use (not in Pocket Guide)	Lab and Electronics
Measured Exposure Level	1 mg/m3
Listed Name	Hg (metal) Mercury Compounds
Pages	193
State of Matter at Room Temperature	Liquid
Exposure Units	mg/m3
NIOSH Limits - TWA	0.05
NIOSH Limits - ST	NA
NIOSH Limits - C	.1
OSHA Limits - TWA	NA
OSHA Limits – ST	NA
OSHA Limits - C	0.1
IDLH	10
Fire Hazard	Does not burn
Vapor through Skin	True
Clothing Removal	When wet/ contaminated
Respirator	SA:CF/ PAPRS+ (canister)
Eye Protection	NR
Skin Cleaning	Soap wash
Skin Damage	True
Mental Confusion	False
Carcinogen	False
Incompatible/ Reactive	True
VP	0.0012 mmHg
Notes	

ANSWER KEYS

Chemical	Methyl Isobutyl Ketone
Use (not in Pocket Guide)	Painting area
Measured Exposure Level	300 ppm
Listed Name	Hexone
Pages	164
State of Matter at Room Temperature	Liquid
Exposure Units	Ppm
NIOSH Limits - TWA	50
NIOSH Limits - ST	75
NIOSH Limits - C	NA
OSHA Limits - TWA	100
OSHA Limits - ST	NA
OSHA Limits - C	NA
IDLH	500
Fire Hazard	Flammable
Vapor through Skin	False
Clothing Removal	When wet/ contaminated
Respirator	CcrOv*/GmFOv/PaprTOv*/Sa*ScbaF
Eye Protection	True
Skin Cleaning	Water flush
Skin Damage	True
Mental Confusion	False
Carcinogen	False
Incompatible/ Reactive	True
VP	16 mmHg
Notes	

ANSWER KEYS

Chemical	PCB-containing transformer oil 54% Chlorine
Use (not in Pocket Guide)	Electrical equipment
Measured Exposure Level	0.0005 mg/m3
Listed Name	Chlorodiphenyl
Pages	64
State of Matter at Room Temperature	Liquid
Exposure Units	mg/m3
NIOSH Limits - TWA	Ca 0.001
NIOSH Limits - ST	NA
NOSH Limits - C	NA
OSHA Limits - TWA	0.05
OSHA Limits- ST	NA
OSHA Limits - C	NA
IDLH	Ca (5)
Fire Hazard	Does not burn
Vapor through Skin	True
Clothing Removal	When wet/ contaminated
Respirator	¥ScbaF:Pd, Pp/SaF:Pd, Pp:AScba
Eye Protection	True
Skin Cleaning	Soap wash
Skin Damage	True
Mental Confusion	False
Carcinogen	True
Incompatible/ Reactive	True
VP	0.00006 mmHg
Notes	

ANSWER KEYS

Chemical	Perchlorethylene
Use (not in Pocket Guide)	Cleaning (metal, clothing)
Measured Exposure Level	200 ppm
Listed Name	Tetrachloroethylene
Pages	301
State of Matter at Room Temperature	Liquid
Exposure Units	Ppm
NIOSH Limits - TWA	Not listed
NIOSH Limits - ST	NA
NIOSH Limits - C	NA
OSHA Limits - TWA	100
OSHA Limits - ST	300
OSHA Limits - C	200
IDLH	150
Fire Hazard	Does not burn
Vapor through Skin	False
Clothing Removal	When wet/ contaminated
Respirator	¥ScbaF:Pd, Pp/SaF:Pd, Pp:AScba
Eye Protection	True
Skin Cleaning	Soap wash
Skin Damage	True
Mental Confusion	False
Carcinogen	True
Incompatible/ Reactive	True
VP	14 mmHg
Notes	Will decompose

ANSWER KEYS

Chemical	Sodium Cyanide
Use (not in Pocket Guide)	Painting area
Measured Exposure Level	20 mg/m3
Listed Name	Sodium Cyanide
Pages	282
State of Matter at Room Temperature	Solid
Exposure Units	mg/m3
NIOSH Limits - TWA	NA
NIOSH Limits - ST	NA
NIOSH Limits - C	5
OSHA Limits - TWA	5
OSHA Limits -ST	NA
OSHA Limits - C	NA
IDLH	25
Fire Hazard	Does not burn
Vapor through Skin	False
Clothing Removal	When wet/ contaminated
Respirator	Sa/ ScbaF
Eye Protection	True
Skin Cleaning	Soap wash
Skin Damage	True
Mental Confusion	True
Carcinogen	False
Incompatible/ Reactive	True
VP	0 mmHg
Notes	

ANSWER KEYS

Chemical	Styrene Monomer
Use (not in Pocket Guide)	Plastic manufacturing
Measured Exposure Level	500 ppm
Listed Name	Styrene
Pages	287
State of Matter at Room Temperature	Liquid
Exposure Units	Ppm
NIOSH Limits - TWA	50
NIOSH Limits - ST	100
NIOSH Limits - C	NA
OSHA Limits - TWA	100
OSHA Limits - ST	600
OSHA Limits - C	200
IDLH	700
Fire Hazard	Flammable
Vapor through Skin	False
Clothing Removal	When wet/ contaminated
Respirator	CcrOv*/ Sa
Eye Protection	True
Skin Cleaning	Water flush
Skin Damage	True
Mental Confusion	False
Carcinogen	False
Incompatible/ Reactive	True
VP	5 mmHg
Notes	

ANSWER KEYS

Chemical	Sulfuric Acid
Use (not in Pocket Guide)	Water treatment, transportation
Measured Exposure Level	5 mg/m3
Listed Name	Sulfuric Acid
Pages	290
State of Matter at Room Temperature	Liquid
Exposure Units	mg/m3
NIOSH Limits - TWA	1
NIOSH Limits - ST	NA
NIOSH Limits - C	NA
OSHA Limits - TWA	1
OSHA Limits - ST	NA
OSHA Limits - C	NA
IDLH	15
Fire Hazard	Does not burn
Vapor through Skin	False
Clothing Removal	When wet
Respirator	Sa:Cf£/PaprAgHie£/CcrFAg100/GmFAg100/ ScbaF/SaF
Eye Protection	Yes
Skin Cleaning	Water Flush
Skin Damage	True
Mental Confusion	False
Carcinogen	False
Incompatible/ Reactive	True
VP	0.001 mmHg
Notes	

ANSWER KEYS

Chemical	Toluene
Use (not in Pocket Guide)	Painting Area
Measured Exposure Level	200 ppm
Listed Name	Toluene
Pages	311
State of Matter at Room Temperature	Liquid
Exposure Units	ppm
NIOSH Limits - TWA	100
NIOSH Limits - ST	150
NIOSH Limits - C	NA
OSHA Limits - TWA	200
OSHA Limits - ST	500
OSHA Limits - C	300
IDLH	500
Fire Hazard	Flammable
Vapor through Skin	False
Clothing Removal	When wet/ contaminated
Respirator	CcrOV*/PaprOV*/GmFOv/Sa*/ScbaF
Eye Protection	True
Skin Cleaning	Soap wash
Skin Damage	True
Mental Confusion	True
Carcinogen	False
Incompatible/ Reactive	True
VP	21 mmHg
Notes	

ANSWER KEYS

Chemical	
Use (not in Pocket Guide)	
Measured Exposure Level	Given on instruction page
Listed Name	
Pages	
State of Matter at Room Temperature	Physical Description
Exposure Units	Ppm
NIOSH Limits - TWA	Exposure Limits
NIOSH Limits - ST	Exposure Limits
NIOSH Limits - C	*Exposure Limits*
OSHA Limits - TWA	Exposure Limits
OSHA Limits - ST	Exposure Limits
OSHA Limits - C	Exposure Limits
IDLH	Exposure Limits
Fire Hazard	Chemical & Physical Properties
Vapor through Skin	Exposure Limits (must be in brackets)
Clothing Removal	Personal Protection/Sanitation (see Table 2)
Respirator	Respirator Recommendations (see Tables 3 & 4)
Protection	Personal Protection/Sanitation (see Table 2)
Skin Cleaning	First Aid (see Table 6)
Skin Damage	Exposure Routes, Symptoms, Target Organs (see Table 5)
Mental Confusion	Exposure Routes, Symptoms, Target Organs (see Table 5)
Carcinogen	Exposure Routes, Symptoms, Target Organs (see Table 5)
Incompatible/ Reactive	Incompatibilities and Reactivities
VP	Chemical & Physical Properties
Notes	