



Heat-Related Illnesses

A Risk Easy to Battle

Training Hazard Area: Extreme Temperatures

Training Topic: Heat-related illnesses: recognition, prevention and treatment

Target Industries: Construction and general industries

Goal: To train students to recognize, prevent and treat heat-related illnesses resulting in fewer illnesses and deaths from working in extreme heat

Learning Objectives: Students will learn: 1) the signs and symptoms of heat stroke, heat exhaustion, heat cramps, hyponatremia and dehydration; 2) how to prevent heat-related illnesses when working in extreme heat indoors or outdoors; 3) how to treat heat-related illnesses; 4) employers and managers – how to develop and implement a heat acclimatization plan and reduce their employees’ risks of developing heat-related illnesses

Languages: English and Spanish

Course Materials: Table 1 in the Appendix

Course Deliver Methods: Informal tabletop flip chart, formal PowerPoint presentations, short videos, worksheets, handouts and game. Can be taught in three separate sections: Recognition, prevention and treatment.

Environment: Can be taught indoors or outdoors utilizing different course materials

Evaluation Materials: Pre and post assessments, class examinations and class evaluations

Class Length: 20 – 60 minutes or longer depending on materials and method used

Handouts: Three handouts: NOAA’s National Weather Service Heat Index Chart, NOAA’s National Weather Service Heat Index Chart for Low Humidity and Are You Hydrated? – urine color chart.

Promotional Material: Two 8 x 10 flyers in English and Spanish to promote the training classes.

Workplace Posters: 1) Three 11 x 17 posters that can also be printed 8 x 10 Topics: Reminding workers to cool down frequently to avoid heat-related illnesses, reminding workers to prevent heat-related illnesses and reminding workers to stay hydrated to prevent heat-related illnesses. 2) Two 8 x 10 posters. Topics: Recognizing and treating heat-related illnesses and recognizing and treating heat exhaustion and heat stroke.

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Course Matrix	
<i>Training Venue: Small informal group indoors or outdoors</i>	
Presentation Materials	<p>Sign in sheets</p> <p>Tabletop Flip Chart: Should be printed out, laminated and spiral bound. The instructor's notes are on one side and the class material on the other side.</p> <p>Videos: Three short videos on recognition, prevention and treatment that can be shown on an iPad if desired.</p> <p>Handouts: NOAA heat index charts and urine color chart. Should be printed and laminated.</p>
Time	<p>20 – 60 minutes</p> <p>The tabletop flip chart is designed in three 20 minutes sections (recognition, prevention and treatment) that can be taught separately or all at once.</p>
Files	<p>SigininSheets_Spanish.docx</p> <p>SigininSheets_English.docx</p> <p>TableTop_FlipChart_English.pptx</p> <p>TableTop_FlipChart_Spanish.pptx</p> <p>Heat_Related_Illnesses_English.mp4</p> <p>Heat_Related_Illnesses_Spanish.mp4</p> <p>Treatment_English.mp4</p> <p>Treatment_Spanish.mp4</p> <p>Prevention_Spanish.mp4</p> <p>Prevention_English.mp4</p> <p>Handout_NOAA_Heat_Index_ES.docx</p> <p>Handout_NOAA_Low_Humidity_ES.docx</p> <p>Handout_Urine_Color_Chart_ES.docx</p>
<i>Training Venue: Small to medium size group of employees with activities</i>	
Presentation materials	<p>Sign in sheets</p> <p>Pre and post assessments</p> <p>PowerPoint presentation for employees</p> <p>PowerPoint presentation of case studies</p> <p>Videos: Three short videos on recognition, prevention and treatment that can be shown on an iPad if desired</p> <p>Handouts: NOAA heat index charts and urine color chart. Should be printed and laminated.</p> <p>Worksheets: Fill in the blank, true and false, work match and crossword puzzle.</p> <p>Game: Lotería</p> <p>Exam B</p> <p>Class evaluations</p>
Time	<p>20 – 120 minutes</p> <p>The PowerPoint presentation is designed in three 20 minutes sections (recognition, prevention and treatment) that can be taught separately</p>

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	or all at once. The case studies can be discussed if desired. Completing the worksheets and the crossword puzzle and/or playing Lotería will add time to the training course but will also increase retention.
Files	<p>SigininSheets_Spanish.docx SigininSheets_English.docx PrePostAssessments_English.docx PrePostAssessments_Spanish.docx Heat_Related_Illnesses_Employee_English.pptx Heat_Related_Illnesses_Employee_Spanish.pptx CaseStudies_English.pptx CaseStudies_Spanish.pptx Worksheets_Spanish.docx Worksheets_English.docx Crossword_Puzzle_English.docx Crossword_Puzzle_Spanish.docx GameLotería_English.docx GameLotería_Spanish.docx Heat_Related_Illnesses_English.mp4 Heat_Related_Illnesses_Spanish.mp4 Treatment_English.mp4 Treatment_Spanish.mp4 Prevention_Spanish.mp4 Prevention_English.mp4 Handout_NOAA_Heat_Index_ES.docx Handout_NOAA_Low_Humidity_ES.docx Handout_Urine_Color_Chart_ES.docx Exams_English.docx Exams_Spanish.docx Training_Evaluation_English.docx Training_Evaluation_Spanish.docx</p>
<i>Training Venue: Small to medium size group of employers or managers with activities</i>	
Presentation materials	<p>Sign in sheets Pre and post assessments PowerPoint presentation for employers or managers PowerPoint presentation of case studies Videos: Three short videos on recognition, prevention and treatment that can be shown on an iPad if desired Handouts: NOAA heat index charts and urine color chart. Should be printed and laminated. Worksheets: Fill in the blank, true and false, work match and crossword puzzle. Game: Lotería Exam A Class evaluations</p>
Time	20 – 120 minutes

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	The PowerPoint presentation is designed in three 20 minutes sections (recognition, prevention and treatment) that can be taught separately or all at once. Completing the worksheets and the crossword puzzle and/or playing Lotería will add time to the training course but will also increase retention. The case studies can be discussed if desired.
Files	<p> SigininSheets_Spanish.docx SigininSheets_English.docx PrePostAssessments_English.docx PrePostAssessments_Spanish.docx Heat_Related_Illnesses_Manager_English.pptx Heat_Related_Illnesses_Manager_Spanish.pptx CaseStudies_English.pptx CaseStudies_Spanish.pptx Worksheets_Spanish.docx Worksheets_English.docx Crossword_Puzzle_English.docx Crossword_Puzzle_Spanish.docx GameLotería_English.docx GameLotería_Spanish.docx Heat_Related_Illnesses_English.mp4 Heat_Related_Illnesses_Spanish.mp4 Treatment_English.mp4 Treatment_Spanish.mp4 Prevention_Spanish.mp4 Prevention_English.mp4 Handout_NOAA_Heat_Index_ES.docx Handout_NOAA_Low_Humidity_ES.docx Handout_Urine_Color_Chart_ES.docx Exams_English.docx Exams_Spanish.docx Training_Evaluation_English.docx Training_Evaluation_Spanish.docx </p>
Training Venue : Lecture	
Presentation materials	<p> Sign in sheets PowerPoint presentation for employers or managers PowerPoint presentation of case studies Videos: Three short videos on recognition, prevention and treatment that can be shown on an iPad if desired Handouts: NOAA heat index charts and urine color chart. Should be printed and laminated. Class evaluations </p>
Time	<p> 20 – 120 minutes The PowerPoint presentations are designed in three 20 minutes sections (recognition, prevention and treatment) that can be taught separately or all at once. The case studies can be discussed if desired. </p>

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Files	SigininSheets_Spanish.docx SigininSheets_English.docx Heat_Related_Illnesses_Employee_English.pptx Heat_Related_Illnesses_Employee_Spanish.pptx Heat_Related_Illnesses_Manager_English.pptx Heat_Related_Illnesses_Manager_Spanish.pptx CaseStudies_English.pptx CaseStudies_Spanish.pptx Heat_Related_Illnesses_English.mp4 Heat_Related_Illnesses_Spanish.mp4 Treatment_English.mp4 Treatment_Spanish.mp4 Prevention_Spanish.mp4 Prevention_English.mp4
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References

Bennett, B.L., Hew-Butler, T., Hoffman, M.D., Rogers, I.R. and M.H. Rosner. "Wilderness Medical Society Practice Guidelines for Treatment of Exercise-Associated Hyponatremia: 2014 Update". *Wilderness & Environmental Medicine*, 2014, 25, S30-S42.

Jacklitsch, B., Williams, W.J., Musolins, K., Coca, A., Kim, J. and N. Turner. "Criteria for a Recommended Standard, Occupational Exposure to Heat and Hot Environments". Revised 2016. Department of Health and Human Services, Centers for Disease Control and Prevention, National Institute for Occupational Safety and Health.

Lipman, G.S., Gaudio, F.G., Eifling, K.P., Ellis, M.A., Otten, E.M. and C.K. Grissom. "Wilderness Medical Society Practice Guidelines for Prevention and Treatment of Heat Illness: 2019 Update". *Wilderness & Environmental Medicine*, 2018, 00(00):1-14.

Urso, C., Brucculeri, S. and G. Caimi. "Physiopathological, Epidemiological, Clinical and Therapeutic Aspects of Exercise-Associated Hyponatremia.". *Journal of Clinical Medicine*, 2014, 3, 1258-1275.

Appendix 1.

Table 1: Heat-Related Illnesses Course Materials	
File	Description
CaseStudies_English.pptx	Case Studies in English
CaseStudies_Spanish.pptx	Case Studies in Spanish
Crossword_Puzzle_English.docx	Crossword Puzzle in English
Crossword_Puzzle_Spanish.docx	Crossword Puzzle in Spanish
Exams_English.docx	Final exams in English Exam A – designed for managers and employers Exam B – designed for workers
Exams_Spanish.docx	Final exams in English Exam A – designed for managers and employers Exam B – designed for workers
GameLotería_English.docx	The game Lotería in English. A traditional game of chance, similar to bingo but using pictures instead of numbers.
GameLotería_Spanish.docx	The game Lotería in Spanish. A traditional game of chance, similar to bingo but using pictures instead of numbers.
Handout_NOAA_Heat_Index_ES.docx	Handout - NOAA's National Weather Service Heat Index Chart: Temperature versus relative humidity. How hot it really feels when the effects of humidity are added to high temperature. Can be printed out, laminated and cut in two. English on one side. Spanish on the other.
Handout_NOAA_Low_Humidity_ES.docx	Handout - NOAA's National Weather Service Heat Index Chart for Low Humidity: Temperature versus relative humidity. More appropriate for the southwest. How hot it really feels when the effects of humidity are added to high temperature. Can be printed out, laminated and cut in two. English on one side. Spanish on the other.
Handout_Urine_Color_Chart_ES.docx	Handout – Are You Hydrated? Gives a urine color chart that can be used by workers to see if they are hydrated. Can be printed out, laminated and cut in two. English on one side. Spanish on the other.
Heat_Related_Illnesses_English.mp4	Video in English on the recognition of heat-related illnesses.
Heat_Related_Illnesses_Spanish.mp4	Video in Spanish on the recognition of heat-related illnesses.

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Heat_Related_Illnesses_Employee_English.pptx	PowerPoint presentation in English on the recognition, prevention and treatment of heat-related illnesses designed for employees. Suitable for all audiences but does not over employer responsibilities.
Heat_Related_Illnesses_Employee_Spanish.pptx	PowerPoint presentation in Spanish on the recognition, prevention and treatment of heat-related illnesses designed for employees. Suitable for all audiences but does not over employer responsibilities.
Heat_Related_Illnesses_Manager_English.pptx	PowerPoint presentation in English on the recognition, prevention and treatment of heat-related illnesses designed for employers or managers.
Heat_Related_Illnesses_Manager_Spanish.pptx	PowerPoint presentation in Spanish on the recognition, prevention and treatment of heat-related illnesses designed for employers or managers.
Heat_Related_Illnesses_Poster_English.docx	8 x 10 poster in English that summarizes heat-related illnesses and treatment.
Heat_Related_Illnesses_Poster_Spanish.docx	8 x 10 poster in Spanish that summarizes heat-related illnesses and treatment.
Heat_Stroke_Exhaustion_Poster_English.docx	8 x 10 poster in English that summarizes the difference between the signs, symptoms and treatment of heat stroke and heat exhaustion.
Heat_Stroke_Exhaustion_Poster_Spanish.docx	8 x 10 poster in Spanish that summarizes the difference between the signs, symptoms and treatment of heat stroke and heat exhaustion.
Course_Manual.docx	Course manual that contains description and use of all course materials.
Prevention_English.mp4	Video in English on the prevention of heat-related illnesses.
Prevention_Spanish.mp4	Video in Spanish on the prevention of heat-related illnesses.
Poster_Cool_ES.pptx	11 x 17 poster that reminds workers to cool down frequently to avoid heat-related illnesses. English and Spanish both in file. Can be printed on 8 x 10.
Poster_Heat_Illness_ES.pptx	11 x 17 poster that reminds workers to prevent heat-related illnesses. English and Spanish both in file. Can be printed on 8 x 10.
Poster_Hydration_ES.pptx	11 x 17 poster that reminds workers to stay hydrated to prevent heat-related illnesses. English and Spanish both in file. Can be printed on 8 x 10.

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PrePostAssessments_English.docx	Pre- and Post- assessments in English to measure learning student learning.
PrePostAssessments_Spanish.docx	Pre- and Post- assessments in Spanish to measure learning student learning.
Promotional_Flyers_ES.pptx	Two 8 x 10 flyers in English and Spanish to promote the training classes.
SigninSheets_Spanish.docx	Sign in sheets in Spanish for students attending training class.
SigninSheets_English.docx	Sign in sheets in English for students attending training class.
TableTop_FlipChart_English.pptx	Tabletop flip chart in English best for small informal groups. Should be printed out, laminated and spiral bound.
TableTop_FlipChart_Spanish.pptx	Tabletop flip chart in Spanish best for small informal groups. Should be printed out, laminated and spiral bound.
Training_Evaluation_English.docx	Training evaluation form in English.
Training_Evaluation_Spanish.docx	Training evaluation form in Spanish.
Treatment_English.mp4	Video in English on the treatment of heat-related illnesses.
Treatment_Spanish.mp4	Video in English on the treatment of heat-related illnesses.
Worksheets_Spanish.docx	Three worksheets in Spanish: fill in the blank, true and false, word match.
Worksheets_English.docx	Three worksheets in Course: fill in the blank, true and false, word match.

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