**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** |
| ***Training Venue: Small informal group indoors or outdoors*** |
| Presentation Materials | Sign in sheetsTabletop 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.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. |
| Time | 20 – 60 minutesThe tabletop flip chart is designed in three 20 minutes sections (recognition, prevention and treatment) that can be taught separately or all at once. |
| Files | SigininSheets\_Spanish.docxSigininSheets\_English.docxTableTop\_FlipChart\_English.pptxTableTop\_FlipChart\_Spanish.pptxHeat\_Related\_Illnesses\_English.mp4Heat\_Related\_Illnesses\_Spanish.mp4Treatment\_English.mp4Treatment\_Spanish.mp4Prevention\_Spanish.mp4Prevention\_English.mp4Handout\_NOAA\_Heat\_Index\_ES.docxHandout\_NOAA\_Low\_Humidity\_ES.docxHandout\_Urine\_Color\_Chart\_ES.docx |
| ***Training Venue: Small to medium size group of employees with activities*** |
| Presentation materials | Sign in sheetsPre and post assessmentsPowerPoint presentation for employeesPowerPoint presentation of case studiesVideos: Three short videos on recognition, prevention and treatment that can be shown on an iPad if desiredHandouts: 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: LoteríaExam BClass evaluations |
| Time | 20 – 120 minutesThe PowerPoint presentation is 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. Completing the worksheets and the crossword puzzle and/or playing Lotería will add time to the training course but will also increase retention. |
| Files | SigininSheets\_Spanish.docxSigininSheets\_English.docxPrePostAssessments\_English.docxPrePostAssessments\_Spanish.docxHeat\_Related\_Illnesses\_Employee\_English.pptxHeat\_Related\_Illnesses\_Employee\_Spanish.pptxCaseStudies\_English.pptxCaseStudies\_Spanish.pptxWorksheets\_Spanish.docxWorksheets\_English.docxCrossword\_Puzzle\_English.docxCrossword\_Puzzle\_Spanish.docxGameLotería\_English.docxGameLotería\_Spanish.docxHeat\_Related\_Illnesses\_English.mp4Heat\_Related\_Illnesses\_Spanish.mp4Treatment\_English.mp4Treatment\_Spanish.mp4Prevention\_Spanish.mp4Prevention\_English.mp4Handout\_NOAA\_Heat\_Index\_ES.docxHandout\_NOAA\_Low\_Humidity\_ES.docxHandout\_Urine\_Color\_Chart\_ES.docxExams\_English.docxExams\_Spanish.docxTraining\_Evaluation\_English.docxTraining\_Evaluation\_Spanish.docx |
| ***Training Venue: Small to medium size group of employers or managers with activities*** |
| Presentation materials | Sign in sheetsPre and post assessmentsPowerPoint presentation for employers or managersPowerPoint presentation of case studiesVideos: Three short videos on recognition, prevention and treatment that can be shown on an iPad if desiredHandouts: 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: LoteríaExam AClass evaluations |
| Time | 20 – 120 minutesThe 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 | SigininSheets\_Spanish.docxSigininSheets\_English.docxPrePostAssessments\_English.docxPrePostAssessments\_Spanish.docxHeat\_Related\_Illnesses\_Manager\_English.pptxHeat\_Related\_Illnesses\_Manager\_Spanish.pptxCaseStudies\_English.pptxCaseStudies\_Spanish.pptxWorksheets\_Spanish.docxWorksheets\_English.docxCrossword\_Puzzle\_English.docxCrossword\_Puzzle\_Spanish.docxGameLotería\_English.docxGameLotería\_Spanish.docxHeat\_Related\_Illnesses\_English.mp4Heat\_Related\_Illnesses\_Spanish.mp4Treatment\_English.mp4Treatment\_Spanish.mp4Prevention\_Spanish.mp4Prevention\_English.mp4Handout\_NOAA\_Heat\_Index\_ES.docxHandout\_NOAA\_Low\_Humidity\_ES.docxHandout\_Urine\_Color\_Chart\_ES.docxExams\_English.docxExams\_Spanish.docxTraining\_Evaluation\_English.docxTraining\_Evaluation\_Spanish.docx |
| ***Training Venue : Lecture*** |
| Presentation materials | Sign in sheetsPowerPoint presentation for employers or managersPowerPoint presentation of case studiesVideos: Three short videos on recognition, prevention and treatment that can be shown on an iPad if desiredHandouts: NOAA heat index charts and urine color chart. Should be printed and laminated.Class evaluations |
| Time | 20 – 120 minutesThe 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. |
| Files | SigininSheets\_Spanish.docxSigininSheets\_English.docxHeat\_Related\_Illnesses\_Employee\_English.pptxHeat\_Related\_Illnesses\_Employee\_Spanish.pptxHeat\_Related\_Illnesses\_Manager\_English.pptxHeat\_Related\_Illnesses\_Manager\_Spanish.pptxCaseStudies\_English.pptxCaseStudies\_Spanish.pptxHeat\_Related\_Illnesses\_English.mp4Heat\_Related\_Illnesses\_Spanish.mp4Treatment\_English.mp4Treatment\_Spanish.mp4Prevention\_Spanish.mp4Prevention\_English.mp4 |

***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.**

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| **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 EnglishExam A – designed for managers and employers Exam B – designed for workers |
| Exams\_Spanish.docx | Final exams in EnglishExam 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. |
| 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. |
| 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. |
| SigininSheets\_Spanish.docx | Sign in sheets in Spanish for students attending training class. |
| SigininSheets\_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. |