



LESSON 3

SEAFOOD-BORNE ILLNESSES & RISKS FROM EATING SEAFOOD

OVERVIEW

APPROXIMATE TIME TO TEACH

1 ½ hours (40 slides)
Depending on the activities you choose to do, the lesson may take longer.

MATERIALS NEEDED

Materials for the activity What Is a Part Per Million? — Serial Dilution

GOALS

Increase knowledge of the potential health risks of eating seafood.

OBJECTIVES

Participants will increase their knowledge of the following:

- Potential health risks associated with eating seafood
- The context about the potential health risks
- Seafood safety inspection programs and country of origin labeling (COOL)

ACTIVITIES

Demonstrate a part per million. Use the activity, What Is a Part Per Million? — Serial Dilution.

EVALUATION TOOLS

Pretest: participants will complete before beginning lesson 3. A posttest will be given at the end of the lesson. Changes in knowledge will be measured by the test results. Number the pre- and posttests ahead of time so the results can be matched.

LESSON REFERENCES
AND FURTHER
INFORMATION

The Seafood Health Facts: Making Smart Choices internet site developed by Oregon State University, Cornell University, the Universities of Delaware, Rhode Island, Florida and California and the Community Seafood Initiative is an excellent resource for information on the benefits and risks of seafood consumption. <http://www.seafoodhealthfacts.org/>

Centers for Disease Control and Prevention: <http://www.cdc.gov/>

CDC – Botulism:

<http://www.cdc.gov/nczved/divisions/dfbmd/diseases/botulism/>

CDC – Estimates of Foodborne Illnesses:

<http://www.cdc.gov/foodborneburden/>

CDC – Food Safety: <http://www.cdc.gov/foodsafety/facts.html>

CDC – Listeria: <http://www.cdc.gov/listeria/>

CDC – Marine Toxins:

http://www.cdc.gov/nczved/divisions/dfbmd/diseases/marine_toxins/

CDC – Norovirus: <http://www.cdc.gov/norovirus/index.html>

CDC – Salmonella: <http://www.cdc.gov/salmonella/>

CDC – Vibrio:

<http://www.cdc.gov/vibrio/vibriov.html>

<http://www.cdc.gov/vibrio/vibriop.html>

COOL Regulations: <http://www.ams.usda.gov/cool/>

Dietary Guidelines for Americans, 2010:

<http://www.cnpp.usda.gov/dgas2010-policydocument.htm>

Environmental Protection Agency, Fish Advisories:

<http://water.epa.gov/scitech/swguidance/fishshellfish/fishadvisories/index.cfm>

Food Allergy and Anaphylaxis Network:

<http://www.foodallergy.org/page/fish-allergy>

<http://www.foodallergy.org/page/shellfish-allergy>

Food and Drug Administration, Fish and Fisheries Products Hazards and Controls Guidance, Fourth Edition 2011.

<http://www.fda.gov/Food/GuidanceRegulation/HACCP/ucm2006764.htm>

FDA, Food Allergies:

<http://www.fda.gov/Food/ResourcesForYou/Consumers/ucm079311.htm>

FDA, Foodborne Pathogenic Microorganisms and Natural Toxins Handbook, Bad Bug Book 2nd Edition:

<http://www.fda.gov/Food/FoodborneIllnessContaminants/CausesOfIllnessBadBugBook/>

LESSON REFERENCES
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INFORMATION

FDA, National Shellfish Sanitation Program:

<http://www.fda.gov/food/guidanceregulation/federalstatefoodprograms/ucm2006754.htm>

FDA, What You Need to Know About Mercury in Fish and Shellfish:

<http://www.fda.gov/Food/ResourcesForYou/Consumers/ucm110591.htm>

Foodborne Diseases, National Institute of Allergy and Infectious Diseases Fact Sheet, National Institutes of Health, U.S. Department of Health and Human Services.

<http://www.niaid.nih.gov/topics/foodborne/pages/default.aspx>

Food Safety: <http://www.foodsafety.gov/>

Gall, K. 1992. Seafood Savvy: A Consumer's Guide to Seafood Nutrition, Safety, Handling, and Preparation. Information Bulletin 104IB226 Cornell Cooperative Extension.

Hicks, D. and D. Kramer. 1999. Seafood Safety: What Consumers Need to Know. University of Delaware and University of Alaska Sea Grant College Program.

Hillers, V. 1990. Communicating About Risks in Foods. EB1562 Cooperative Extension Washington State University.

Institute of Medicine of the National Academies. Seafood Choices: Balancing Benefits and Risks. 2007. Washington, D.C.

Seafood Education and Marketing, The University of Georgia Marine Extension Service. <http://www.marex.uga.edu/seafood/>

Seafood Network Information Center. Oregon State University.

<http://seafood.oregonstate.edu/>

Seafood Safety: Assessing the Benefits and Risks. Rutgers University.

<http://njaes.rutgers.edu/seafoodsafety/>

Technical Papers:

Centers for Disease Control and Prevention, *Surveillance for Foodborne-Disease Outbreaks – United States, 2008*. Morbidity and Mortality Weekly Report/September 9, 2011/Vol. 60/No. 35:

http://www.cdc.gov/mmwr/preview/mmwrhtml/mm6035a3.htm?s_cid=mm6035a3_w

Cohen, J.T., D.C. Bellinger, W.E. Connor, P.M. Kris-Etherton, R.S. Lawrence, D.A. Savitz, B.A. Shaywitz, S.M. Teutsch, and G.M. Gray. 2005. A Quantitative Risk-Benefit Analysis of Changes in Population Fish Consumption. *American Journal of Preventive Medicine*. 29 (4): 325-334.
European Food Safety Authority. 2005. Opinion of the CONTAM Panel Related to the Safety Assessment of Wild and Farmed Fish. *The EFSA Journal*. 236: 1-118.

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Food and Agriculture Organization of the United Nations/World Health Organization (2011). Report of the Joint FAO/WHO Expert Consultation on the Risks and Benefits of Fish Consumption. Rome, FAO; Geneva, WHO, 50 pp. <http://www.fao.org/docrep/014/ba0136e/ba0136e00.pdf>

Grandjean, P., P. Weihe, R.F. White, F. Debes, S. Araki, and K. Yokoyama. 1997. Cognitive Deficit in 7-year-old Children with Prenatal Exposure to Methylmercury. *Neurotoxicol Teratol.* 19: 417-428.

Hardy, R.W. "Color Added" Labeling and Carotenoid Pigments in Salmon Feed. *Aquaculture Magazine*, January/February 2005.

Hardy, R.W. Contaminants in Salmon: A Follow-Up. *Aquaculture Magazine*, March/April 2005.

Huwe, J.K. 2002. Dioxins in Food: A Modern Agricultural Perspective. *Journal of Agricultural and Food Chemistry.* 50: 1739-1750.

Lynch, M., J. Painter, R. Woodruff, and C. Braden. Surveillance for Foodborne-Disease Outbreaks – United States, 1998-2002. *Morbidity and Mortality Weekly Report* /November 10, 2006/Vol. 55(SS10): 1-34. <http://www.cdc.gov/Mmwr/preview/mmwrhtml/ss5510a1.htm>

Myers, G.J., P.W. Davidson, C. Cox, C.F. Shamlaya, D. Palumbo, and E. Cernichiari. 2003. Prenatal Methylmercury Exposure From Ocean Fish Consumption in the Seychelles Child Development Study. *Lancet.* 361: 1686-1692.

Oken, E., R.O. Wright, K.P. Kleinman, D. Bellinger, C.J. Amarasiriwardena, H. Hu, J.W. Rich-Edwards, and M.W. Gillman. 2005. Maternal Fish Consumption, Hair Mercury, and Infant Cognition in a U.S. Cohort. *Environmental Health Perspectives.* 113 (10): 1376-1380.

Oken, E., K.P. Kleinman, W.E. Berland, S.R. Simon, J.W. Rich-Edwards, and M.W. Gillman. 2003. Decline in Fish Consumption Among Pregnant Women After a National Mercury Advisory. *Obstet Gynecol.* 102 (2): 346-351.

Scallan E, Hoekstra RM, Angulo FJ, Tauxe RV, Widdowson M-A, Roy SL, et al. Foodborne illness acquired in the United States—major pathogens. *Emerg Infect Dis* [serial on the Internet]. 2011 Jan [sourced April 27, 2012]. <http://dx.doi.org/10.3201/eid1701.P111101>

Scallan E, Griffin PM, Angulo FJ, Tauxe RV, Hoekstra RM. Foodborne illness acquired in the United States—unspecified agents. *Emerg Infect Dis* [serial on the Internet]. 2011 Jan [sourced April 27, 2012]. <http://dx.doi.org/10.3201/eid1701.P211101>

Schecter, A., P. Cramer, K. Boggess, J. Stanley, O. Papke, J. Olson, A. Silver, and M. Schmitz. 2001. Intake of Dioxins and related Compounds from Food in the U.S. Population. *Journal of Toxicology and Environmental Health, Part A,* 63: 1-18.

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