

# Unit X:

## Conclusion

### MOVING FORWARD

Jeanne Leffers, PhD, RN, FAAN  
Professor Emeritus  
University of Massachusetts Dartmouth  
Dartmouth, MA

Claudia M. Smith, PhD, MPH, RN-BC  
Retired, Assistant Professor  
University of Maryland School of Nursing  
Baltimore, MD

This first edition of the *Environmental Health in Nursing* electronic textbook includes both long-standing and emergent environmental health concerns for nursing and other health professions. Since Florence Nightingale, nurses have been called to consider the environment when promoting human health. In part, this text is a response to the 2005 Institute of Medicine report that called for a renewal of environmental health in nursing (Pope, Snyder & Mood, 2015). Also, environmental health concerns develop from new technologies, new chemicals used globally, new research findings related to health risks, and changes in policy and environmental law. As a result, the topics discussed in each unit of this edition are subject to change.

Since the first efforts to develop this textbook there have been numerous changes in environmental issues. The impact of climate change, growing use of hydraulic fracturing, legislative efforts to address chemical policy reform, new findings about the dangers of flame retardants, BPA, phthalates, and other chemicals are but a few of the ever-changing issues. Such issues have captured the public media and led nurses to become involved in efforts to reduce adverse health outcomes for the populations we serve.

Our first edition was designed to engage nurses to learn more about the impact of the environment upon health, to meet the mandate for the ANA *Scope and Standards of Practice* for their work (ANA, 2015), to become advocates to improve health policy to reduce environmental threats, and to engage in scholarship to improve nursing knowledge for environmental health. We have included

broad range of topics and know that they are not exhaustive. Over thirty nurses have contributed to this text from fourteen states. When you find an omission or desire more depth, we hope you will consider contributing to a later edition which is being planned, even as we launch this edition.

In Unit I, we looked at the nursing profession and the importance of professional involvement to advance environmental health in all settings. Environmental exposures can be studied by looking into specific environments such as homes, workplaces, schools, day care centers, long-term care facilities and hospitals. While we introduced information about each of these settings, we plan to expand our discussion for future editions. In particular, the work of nurses in the Healthy Homes initiative has been substantial and well funded. Initiatives such as the [Eco-Healthy Child Care](#) of the Children's Environmental Health Network (CEHN) show promise in the reduction of exposures for young children in day care settings (CEHN, 2016).

Further, the role of nurses in education, practice, advocacy and policy making and research has grown since the initial call to action in the 1995 Institute of Medicine report (Snyder, Pope & Mood, 1995). Throughout this edition, we have included examples of the impact of nurses in each of these areas. We invite readers to consider sharing your own examples of including environmental health in nursing for the next edition. More information about the role of occupational health nurses will be added as well.

Our Unit II introduced Harmful Exposures for Vulnerable Populations throughout the life span. Our next edition will be expanded to offer more information about specific topics of that chapter. A serious concern not only for pregnant women and the growing fetus but also for future generations is the impact of endocrine disrupting chemicals (EDCs). Many of these are present in pesticides that pose a risk to people of all ages as well. The growing field of [epigenetics](#) examines how changes in both cellular and physiologic traits result from environmental factors. Such changes are external to the actual DNA genome. Gene expression can be altered by environmental factors such

as [pesticides](#) (Collotta, Bertazzi, & Bollati, 2013). Recent studies suggest that [EDCs can be obesogenic](#), that is influence metabolism in ways that increase susceptibility to obesity (Stel & Legler, 2015).

Children are vulnerable to harmful exposures. We plan to include chapters specifically related to children's issues, including asthma, pesticide exposures (including both specific risk information and preventive strategies), neurological impacts of harmful exposures such as lead, as well as cosmetic use and workplace exposures in adolescents. While occupational health nurses promote the health and safety of workers, many chemicals used in the workplace have not been tested for safety for workers or for children and adolescents who might be exposed through toxins that come home on clothing from the workplace. Nurses have unique opportunities to reduce toxic exposures in children.

Unit III introduced environmental sciences which are essential to our understanding of environmental health for health professionals. Multiple in-depth resources are included in links to internet sites. Future editions will include information about epidemiology and how epidemiologic studies inform our knowledge of environmental hazards. We also plan to include more information about specific chemical hazards, both those that have been studied and evolving concerns. Many environmental science courses examine environmental exposures through the source of exposure be it water, air, food and soil. Future discussions will expand information about common exposures, how to reduce risks, and federal and local regulation of exposures.

Unit IV discussed nurse involvement to advance environmental health and sustainability in practice settings. As nurses increase their awareness of and commitment to healthier practice settings, there will be opportunities for nurses to share information of what has been done. Advocacy will be needed to engage nurses in promoting the work in their own practice setting. One area where nurses have been voices for change is with pharmaceutical waste, in both practice and home settings. One goal is to make nurses aware of healthier choices in their personal health and that of their communities in addition to their workplaces.

Unit V contained information about sustainable communities. Growing concerns at local, national and international levels to protect human health and the environment have led to ways to improve the built environment to advance healthy communities. Efforts to improve housing, alternative means of transportation, green space, and community engagement will increase in the future and we plan to add information about nurses

engaged in this work. Sustainability is a growing concern for our health and our planet. Horton et al (2014) argue that public health must lead a social movement to address the threats to sustainability of our civilization that they call planetary health. Without that, they claim that the vast majority of the global population will not maintain health or well-being

Unit VII provided an extensive introduction to climate change and health. We will continue to expand information about climate change including the impact of energy sources and use upon both planetary health and human health. Policies such as the [Clean Power Plan](#) to address the toxic effects to health from electricity producing power plants will be followed for updates in future editions of this textbook. Internationally, countries such as Scotland have [banned fracking](#), while in the US states such as New York have developed bans on fracking. Future editions will offer more information about the research into health effects of fracking, and the impact upon the environment.

In Unit VIII we reported how nurses have been instrumental in advocacy efforts for decades in professional roles, and as parents and citizens. Examples include efforts to bring awareness to both the public and governmental entities for chemical safety for families and children (such as [stroller brigades](#)), climate change, and hazards associated with hydraulic fracturing. In addition, nurses as reported in Unit IV have been successful in improving environmental health and safety in the workplace through [Green team](#) efforts. As more nurses become knowledgeable about environmental impacts upon health, examples of advocacy and policy will expand. We offered some personal stories through interviews with nurse leaders in environmental health nursing and links to the Luminary project. Also, many nurses serve or have served in advisory capacity for the EPA [Children's Health Protection Advisory Committee](#) for specialty organizations for school health, oncology, and developmental disabilities among others. In addition, nurses serve as consultants for topics related to the environment and health across the USA and in other countries. As the growth in advocacy and policy work expands our ability to report on these exciting nurse roles will increase.

In Unit IX we introduced you to eight nurse researchers in the area of environmental health. Nursing knowledge is built upon nursing research and scholarship. As more nurses engage in research relevant to nursing and the environment, so too will the examples offered.

In response to emerging concerns we plan both to update topics offered in this first edition and to expand our

textbook to include a wide range of topics important to nursing practice. To succeed in our educational mission we welcome nurse contributions to future editions. With this online format, contributions can include media links that highlight teaching strategies, professional development successes, advocacy workshops and other innovative learning modalities.

All nurses and other health professionals are called upon to include the environment in their practices whether it is clinical practice, education, policy and advocacy, and/or research. We invite you to reflect on your own practice, family life and community involvement to consider where and when you can apply your environmental health knowledge and skills to improve health. Our future depends upon it.

## REFERENCES

ANA (American Nurses' Association). (2015). *Nursing: Scope and standards of practice*, 3<sup>rd</sup> ed. Silver Spring, MD: Nursebooks.org.

Children's Environmental Health Network (CEHN). (2016). Eco-healthy child care. Retrieved from <http://www.cehn.org/our-work/eco-healthy-child-care/>

Collotta, M., Bertazzi, PA., & Bollati, V. (2013). Epigenetics and pesticides. *Toxicology*, 307:35-41. doi: 10.1016/j.tox.2013.01.017. Epub 2013 Feb 1.

Horton, R., Beaglehole, R., Bonita, R., Raeburn, J., McKee, M. & Wall, S. (2014). From public to planetary health: A manifesto. *The Lancet*, 383, 847.

Pope, AM, Snyder, MA., & Mood, L. (1995). *Nursing, health and the environment: Strengthening the relationship to improve the public's health*. Washington DC: Institute of Medicine, National Academy Press.

Stel, J. & Legler, J. (2015). The role of epigenetics in the latent effects of early life exposure to obesogenic endocrine disrupting chemicals. *Endocrinology*, 156(10): 3466-72. doi: 10.1210/en.2015-1434. Epub 2015 Aug 4.