Occupational and Environmental Health Risks in Health Care

Barbara Sattler, RN, DrPH, FAAN
Professor and Director,
Environmental Health Education Center
University of Maryland School of Nursing

http://www.cdc.gov/exposurereport/
Charlotte Brody, RN
Body Burden Studies

Chemicals found in Charlotte:

214 tested

87 found
Chemicals found in Charlotte

number: associated with:

• 54  Birth defects and dev delays
• 53  Immune toxicants
• 52  Cancer
• 37  Brain and nervous system
• 23  Reproduction and fertility
• 16  Hormone activity
• 10  Gastrointestinal (including liver)
Hazardous Chemicals in Health Care: A Snapshot of Chemicals in Doctors and Nurses

- 12 Doctors
- 8 Nurses
- 62 Chemicals (including congeners)
  - BPA
  - Perfluorinated compounds
  - Phthalates
  - PBDEs
  - Triclosan
- **BPA** – EDC, repro toxicant, breast and prostate Ca, brain function, obesity, thyroid dysfunction

- **Perfluorinated compounds** – EDC, Immunotoxicant, liver/pancreatic tumors (animal)

- **Phthalates** – reproductive development

- **PBDE** – neurotoxicant (brain function, memory, behavioral problems)

- **Triclosan** – thyroid dysfunction, EDC

**At least 24 chemicals were found in any given person studied.**
Body Burden
The Pollution in Newborns

A benchmark investigation of industrial chemicals, pollutants, and pesticides in human umbilical cord blood
Asthmagens and Asthma Triggers in health care

- Chemical Cleaners,
- Disinfectants/sterilizers
- Natural rubber latex
- Pesticides
- Volatile Organic Compounds (VOCs)
- Baking flour
- Acrylics: methyl methacrylate and cyanocrylate
- Perfumes/fragrances
- Phthalates (plasticizers)
- Environmental Tobacco Smoke (ETS)
- Biologic allergens
- Pharmaceuticals
Why a survey on workplace exposures?

• NIOSH estimates the average hospital contains more than 300 chemicals

• Nurses incur exposure risks daily
  – Drug residue
  – Sterilizing chemicals
  – Housekeeping cleaners
  – Pesticides
  – Anesthetic waste gases
  – Radiation
What the survey examined

• Exposures to 11 chemicals or hazardous agents, including
  – Glutaraldehyde
  – Ethylene Oxide
  – Medications
  – Medical devices such as mercury and ionizing radiation
  – Anesthetic Gases
  – Natural Rubber Latex
  – Hand and Skin Disinfection Products
  – Housekeeping Chemicals
Who Completed the Survey

- Total respondents were 1,552 from all 50 states:
  - 80.4% Registered Nurses
  - 13.5% Advanced Practice Registered Nurses
  - 3.5% Licensed Practical Nurses
  - 1.9% Other Health Care Practitioners
  - 92.3% currently in practice
  - 44.7% in practice 1 to 20 years
  - 55.3% in practice 20 to 55 years
Survey Findings ~ Hand & Skin Disinfection

• 96% reported exposures

• 39% higher rates of asthma
Survey Finding ~ Anesthetic Gases

36% reported exposures

Up to seven times higher rates of birth defects in their children (central nervous system, cardiovascular, genitourinary, and musculoskeletal)
Survey Findings ~ Housekeeping Chemicals

- 92% reported exposures
- 47% higher rates of asthma
Survey Findings ~ Medications

- 95% reported exposures
- 14% higher rates of cancer
Survey Findings ~ Medications
Antiretroviral Meds: Suppress HIV virus

• 47%

• 19% higher rates of difficulty conceiving
Survey Findings ~ Medications
Chemotherapeutic Agents

• 41% reported exposures

• 42 percent higher rates of cancer than other nurses.
Survey Findings ~ Mercury Containing Devices

• 77% reported using mercury-containing devices at work.

• 130% higher rates of nervous system problems
Survey Findings ~ Personal Care Products

• 97% reported on-the-job exposures

• 1/3 of all products contain one or more ingredients linked to cancer

• 40% contain “fragrances” (mixtures often associated with allergic reactions and some associated with cancer risks)
Survey Findings ~ Ionizing Radiation

- 53% reported on-the-job exposures
- 16% higher rates of cancer
Survey Findings ~ Latex

• 64% percent of more than 1,500 nurses reported high (at least twice per week) exposure for five years or more.

• In our survey, nurses with frequent, long-term exposures to latex (at least weekly for at least ten years) reported **39 percent higher rates of asthma** than other nurses.
Survey Finding ~ Sterilization & Disinfectant Agents
Ethylene Oxide

• 29% reported on-the-job exposures

• 45% higher rates of asthma
Survey Finding ~ Sterilization & Disinfectant Agents

Glutaraldehyde

- 52% reported on-the-job exposures
- 46% higher rates of asthma
Green Team Logos
Menu of Programs

- Environmentally preferable purchasing
- Energy efficiency
- Glutaraldehyde/EtO elimination
- Green cleaning and microfiber mops
- Green construction, renovation & design
- HIPAA/Confidential paper management
- Integrated pest management
- Mercury elimination
- Pharmaceutical waste management
- PVC/DEHP elimination
- Recycling
- Red bag waste minimization
- Reusable sharps containers
- Single-use device reprocessing
- Solvent recovery
- Sustainable Foods
- Universal waste management
- Water conservation
## Hospital Environmental Health Assessment Tool

<table>
<thead>
<tr>
<th>Hazardous Materials</th>
<th>Assessment</th>
<th>Yes</th>
<th>No</th>
<th>N/A</th>
<th>Standard of Practice</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Does your hospital have:</strong></td>
<td></td>
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<tr>
<td>A written Hazard Communication Policy regarding potentially harmful chemicals?</td>
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<tr>
<td>Have you been trained regarding the specific potential health effects associated with the cleaning products, disinfectants, pharmaceuticals, and other products that you are commonly exposed to at work?</td>
<td></td>
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<tr>
<td>Mercury fever thermometers?</td>
<td>0</td>
<td>0</td>
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<tr>
<td>Mercury sphygmomanometers?</td>
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<tr>
<td>Mercury thermostats?</td>
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<td>0</td>
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<tr>
<td>GI devices (i.e., Miller-Abbott tubes)?</td>
<td>0</td>
<td>0</td>
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<tr>
<td>Latex gloves?</td>
<td>0</td>
<td>0</td>
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<tr>
<td>DEHP-containing IV bags/tubing?</td>
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<td>0</td>
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<tr>
<td>Are pesticides used on hospital grounds?</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td></td>
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<tr>
<td>If so, what?</td>
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<tr>
<td>Are pesticides used in the hospital?</td>
<td>0</td>
<td>0</td>
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<tr>
<td>If so, what?</td>
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<table>
<thead>
<tr>
<th>Waste Management</th>
<th>Do you recycle:</th>
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<tbody>
<tr>
<td>Paper / cardboard?</td>
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<tr>
<td>Plastic / glass?</td>
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<tr>
<td>Electronic waste?</td>
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<tr>
<td>Batteries?</td>
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<tr>
<td>Blue Wrap?</td>
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<tr>
<td>Florescent light bulbs?</td>
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<tr>
<td>Kitchen waste to compost?</td>
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<tr>
<td>Do you require double-sided copies?</td>
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<td>0</td>
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<tr>
<td>Do you know where your trash goes?</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Cleaning</th>
<th>Does your hospital use:</th>
<th></th>
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</thead>
<tbody>
<tr>
<td>Environmentally safe cleaning products and methods?</td>
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<tr>
<td>“Energy Star” appliances and equipment?</td>
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</tbody>
</table>
Audits, Case Studies and Pilot Projects

Mercury

Reusable Sharps Containers

PVC/DEHP

Blue Wrap

Integrated Pest Management
DEHP in IV bags and tubing
(di-ethylhexyl phthalates)
DEHP Leaches into IV fluids
The Power of Nurses

- Highest percentage of employees in facility
- Nurses understand the connection between environmental issues and health
- Precautionary Principle
- Nurses are patient advocates
- Nurses bridge the gap between administrative executives and floor staff
- End user of most products
ANA Setting the Stage

• ANA adopts Environmental Health Principles

• ANA 2010 Scope and Standards of Practice

  Environmental Health Standard of Practice
Integration of O/E Health into Nursing Education

• American Academy of Nurses
• American Association of Colleges of Nurses
• National League for Nursing

• Alliance of Nurses for Healthy Environments
  – www.enviRN.org