Planning for the changing burden of occupational exposures in the Pacific Northwest

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Questions as old as the field itself...

How many people are exposed to contaminants at work?
What are people exposed to?
Is this changing over time?
Exposure surveillance in Federal Region X

EXPOSURE $\rightarrow$ INJURY or ILLNESS
Project Goal:

Estimate the number of workers exposed to a subset of chemical, physical, psychosocial, and safety hazards in Federal Region X to inform research, training, and prevention priorities for the region.
Like all surveillance projects, we need data!

The data says we need more data.

- State Employment Data by SOC (2014 and 2024)
- CANJEM
- O*NET
CANJEM: Canadian Job Exposure Matrix

- Probability, frequency and intensity of exposure for nearly 300 chemical risk factors (by occupation, time period)
Prevalence of several physical, safety, and psychosocial exposures by occupation
## O*NET: BLS tool for job seekers/researchers

### Browse by O*NET Data

#### Work Context — Spend Time Bending or Twisting the Body

How much does this job require bending or twisting your body?

<table>
<thead>
<tr>
<th>Code</th>
<th>Occupation</th>
<th>Exposure Occurrence</th>
</tr>
</thead>
<tbody>
<tr>
<td>37-2012.00</td>
<td>Maids and Housekeeping Cleaners</td>
<td>Continuously</td>
</tr>
<tr>
<td>49-9060.00</td>
<td>Manufactured Building and Mobile Home Installers</td>
<td>Continuously</td>
</tr>
<tr>
<td>49-9046.00</td>
<td>Refractory Materials Repairers, Except Brickmasons</td>
<td>Continuously</td>
</tr>
<tr>
<td>47-5061.00</td>
<td>Roof Bolters, Mining</td>
<td>Continuously</td>
</tr>
<tr>
<td>51-9197.00</td>
<td>Tire Builders</td>
<td>Continuously</td>
</tr>
<tr>
<td>51-9122.00</td>
<td>Painters, Transportation Equipment</td>
<td>Continuously</td>
</tr>
<tr>
<td>43-1015.00</td>
<td>Orderlies</td>
<td>Continuously</td>
</tr>
<tr>
<td>53-7041.00</td>
<td>Hoist and Winch Operators</td>
<td>Continuously</td>
</tr>
<tr>
<td>27-2032.00</td>
<td>Choreographers</td>
<td>Continuously</td>
</tr>
<tr>
<td>29-2021.00</td>
<td>Dental Hygienists</td>
<td>Continuously</td>
</tr>
<tr>
<td>51-6042.00</td>
<td>Shoe Machine Operators and Tenders</td>
<td>Continuously</td>
</tr>
</tbody>
</table>

- Jobs where exposure occurs frequently
- Jobs where exposure occurs less frequently
Which SOCs are exposed?

How many people are employed in each SOC?

O*NET or CANJEM

State employment data (2014, 2024)

MERGE

# Exposed persons by SOC (2014, 2024)
Employment changes in the region (2014 to 2024)

1. Computer & Math
2. Construction & Extraction
3. Healthcare

1. Architecture & Engineering
2. Production
3. Farming, fishing, forestry
Most common chemical exposures

1. Cleaning agents (11.3% of workforce)
2. Organic solvents (9.0% workforce)
3. Engine emissions (8.4% of workforce)
4. Aliphatic aldehydes (7.8% of workforce)
5. Biocides (6.9% of workforce)
Most common O*NET exposures

1. Ergonomic Hazards
   - Make repetitive motions more than half the time (14%)
   - Stand more than half the time (37%)
   - Sit more than half the time (29%)

2. Psychosocial Hazards
   - Irregular or seasonal work schedule (20%)
   - Atypical work hours (42%)
   - Under time pressure (40%)
Most common O*NET exposures

3. Physical Hazards

Sounds are an uncomfortable level more than half the time (14%)

Work outdoors exposed to weather (13%)

Exposed to very hot or very cold temperatures (11%)
Psychosocial exposures
Occupational health disparities

Psychosocial Stress

- Atypical work schedule
- High job demand (e.g. time pressures)
- Low job control (e.g. irregular work schedule)
- Workplace culture
- Baseline stress associated with work
Occupational health disparities

Psychosocial Stress

- Baseline stress associated with work
- Workplace culture
- Low job control (e.g. irregular work schedule)
- High job demand (e.g. time pressures)
- Atypical work schedule

Underrepresented/minority status
- Lack of access to healthcare
- Low job prestige
- Low wages
- Low social capital
- Low education
How can this inform our ERC?

TRAINING PROGRAMS

Traditional hazards and their outcomes

Research, Clinical, and Leadership Skills

History and compliance
How can this inform our ERC?

- Traditional Hazards and their outcomes
- Employment arrangements, worker well-being
- Research, Clinical, and Leadership Skills

Climate change, occupational health disparities
How can this inform our ERC?

Research
- Pilot project priorities

Outreach
- Industries to target?
- Differences by states
- New topics