Occupational/Environmental Toxicology

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• Sub-section of Medical Toxicology
• Exposure occurs at work or in the environment
• Often, but not always, the result of chronic low-level exposure

Case #1

21-year-old healthy male landscaper reaches down to grab some branches and feels a sharp sensation in his hand:
Case #1 (continued)
He sees this snake slither away

Case #1 (continued)
He presents to the clinic with a hand that looks like this:
Diagnosis:
• Local findings
• Bloodwork

Case #1 (continued)
Treatment
• Observation
• +/- CroFab

DOSAGE FORMS AND STRENGTHS:
CroFab® is available as lyophilized powder. Each vial contains up to 1 gram of total protein, a minimum of 0.175 mg of antivenin, and not less than the indicated amount of specific IgG per mg of antivenin.

<table>
<thead>
<tr>
<th>Snake Species/CroFab Antibody Component</th>
<th>Minimum mouse LD50</th>
<th>Units per vial</th>
</tr>
</thead>
<tbody>
<tr>
<td>C. atrox (Western Diamondback rattlesnake)</td>
<td>1750</td>
<td>1.0</td>
</tr>
<tr>
<td>C. adamanteus (Eastern Diamondback rattlesnake)</td>
<td>220</td>
<td>0.125</td>
</tr>
<tr>
<td>C. scutulatus (Multiple rattlesnake)</td>
<td>4575</td>
<td>0.25</td>
</tr>
<tr>
<td>A. piscivorus (Cottonmouth or Water Moccasin)</td>
<td>540</td>
<td>0.25</td>
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Case #2

25-year-old healthy male construction worker sits on an outhouse seat and feels a sharp pain in his scrotum. What is the likely etiology?

Case #2 (continued)

- He sees this spider crawl away

Case #2 (continued)

- 30 minutes later he is in the urgent care with severe abdominal cramping and pain unresponsive to large doses of morphine and diazepam.
Case #2 (continued)

- What would you do next?

Case #3

40-year-old healthy male walks outside the back door into a cloud of noxious fumes and the door slams shut behind him. He goes down on his knees but fortunately, a co-worker was able to grab him and get him to fresh air. An hour later, he is in the ED wheezing and SOB, but has a normal CXR and pulse oximetry.

- What diagnostic testing might be helpful?
Case #3 (continued)

- The likely diagnosis is irritant-induced asthma
- What is his treatment?
- Any guess as to the cause in this case?

Case #3 (continued)

![Diagram of Ammonia]

Ammonia

Case #4

80-year-old male with progressive DOE/SOB over last 10 years. Worked at a US Naval shipyard for 40 years and retired 15 years ago. He quit smoking 25 years ago.
- Exam is remarkable for bilateral basilar crackles
- Spirometry reveals restriction
Case #4 (imaging below)

Case #4 (continued)

- Lung biopsy shows fibrosis and this:

- What is the Diagnosis?
Case #4 (continued)

• Asbestosis-related pulmonary fibrosis i.e., asbestosis as well as asbestos-related pleural disease
• What other diseases is this patient at risk for?

Case #5

A 55-year-old female Chinese immigrant presents to her primary physician with recent onset of fatigue and diffuse ecchymoses. She worked in a shoe manufacturing plant for 30 years prior to immigrating to the USA 2 years ago.

• What is her diagnosis?

Case #5 (continued)

• What is the likely cause of these conditions?
• What type of cancer is this?
• What is her treatment?
Case #6
32-year-old previously healthy male who works as a battery reclaimer. He complains of 9-12 months of fatigue and inability of his wife to get pregnant.

• What does this slide show?

Case #6 (continued)
It shows Basophilic stippling
What is the likely etiology?

Case #6 (continued)
Lead
BLL 87µg/dl
Treatment?
Case #6 (continued)