Cardno ChemRisk
An Introduction for Students
Johns Hopkins School of Public Health
October 16, 2014
Cardno ChemRisk

ChemRisk
About
100 employees

San Francisco
HQ

Boulder

Pittsburgh

Chicago

Southern CA

New York City
Sanibel, FL
Jackson Hole
Cardno ChemRisk is an internationally recognized scientific consulting firm which focuses on understanding risks posed by chemicals (and radionuclides) in any media: soil, water, foods, air, consumer products, sediments.
Cardno ChemRisk’s Distinguishing Characteristics

- Part of an Australian owned international engineering and consulting firm
- We try to answer complex questions about the health hazards posed by chemicals using the entire range of risk assessment methods
- Commitment to academic and scientific achievements in the fields of chemical and radiological risk assessment
- More than 500 papers published by staff
Our culture has been one of fairly youthful staff, working at a fast pace, within a university-like atmosphere... conducting applied research to solve real problems.
Considerable Pool of Intellectual Talent

- 30 Doctorates (PhD)
- 35-40 Masters of Science
- 1 Physician
- 25 Bachelor of Science
- Several engineers
Core Expertise

- Occupational Health and Safety
- Product Sustainability
- Risk Assessment
- Consumer Product Safety
- Contaminated Site Evaluations

- Approximately 60-80% Litigation-Related
- Approximately 20-40% General Consulting
<table>
<thead>
<tr>
<th>Leading International Authority On Many Chemicals &amp; Metals</th>
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<tbody>
<tr>
<td>- Dioxin</td>
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<tr>
<td>- Asbestos</td>
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<tr>
<td>- Lead</td>
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<td>- PCBs</td>
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<tr>
<td>- Chromium</td>
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<td>- Benzene</td>
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<td>- MTBE</td>
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<td>- Beryllium</td>
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<tr>
<td>- Cobalt</td>
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<tr>
<td>- Diacetyl</td>
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<td>- Rubber particles</td>
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<td>- Nanoparticles</td>
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<tr>
<td>- Pharmaceuticals and personal care products</td>
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<tr>
<td>- DEHP and phthalates</td>
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<tr>
<td>- VOCs &amp; Diesel Exhaust</td>
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<tr>
<td>- Mercury</td>
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<td>- Glycol Ethers</td>
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We routinely publish our work in peer-reviewed journals.

Publications lend transparency to the underlying work, which is vetted by other experts in the field.

We want our research to be as good or better than most related university contributions.
## Papers & Presentations (2008-2014)

<table>
<thead>
<tr>
<th>Year</th>
<th>Published Papers</th>
<th>Conference Presentations</th>
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<tbody>
<tr>
<td>2008</td>
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<td>2009</td>
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<td>2013</td>
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<td>2014</td>
<td>19</td>
<td>31</td>
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Some Major Projects
Our work supported by 11 global firms

Goal was to give advice on how to produce tires considered socially responsible in virtually every nation and by every stakeholder

Assessed human risks (if any) to airborne tire particles and any hazard to aquatic species due to runoff
Evaluation California SCP Regulation

The first peer-reviewed manuscript deconstructing the regulation

Analysis of most prevalently listed chemicals on 23 authoritative lists

Describes the requirements of responsible entities

Discusses potential Priority Products
Asbestos Simulation Studies

- Nearly 3000 different historical products contained asbestos
- Exposure to asbestos in sufficient quantities can cause asbestosis, lung cancer, and mesothelioma
- Exposure simulation studies of mastics, bakelite, brakes/clutches, gaskets/packing
**Case details:**
- Residents in OH and WV exposed to PFOA in drinking water
- Ammonium perfluorooctanoate (APFO) used in the manufacture of Teflon; dissociates to PFOA (water soluble)
- Class Action Law suit for medical monitoring

**Our Role: Evaluate Fate and Transport of PFOA**
- Mass balance analysis – use and release by the facility for 53 years of operation
- Predicted concentrations in air, soil, surface water and groundwater
The Brazilian Blowout Controversy

- Formaldehyde was a common ingredient in home-made and professional hair straightening products.
- Thousands of beauticians complained of eye and throat irritation.
- We found that, indeed, formaldehyde was present in workplace at “non-trivial” concentrations (even though some manufacturers said it was not in their products).
Diacetyl in Wine

- Measured headspace concentrations of naturally-occurring diacetyl
  - Concentrations up to 17 ppb
  - NIOSH proposed REL 5 ppb 8-hr TWA 25 ppb STEL
- Do these proposed limits make sense?

Characterization of Airborne Diacetyl Concentrations Associated with the Consumption of Different Types of Wine

J. Pierce¹, L. Spicer¹, A. Abelmann¹, R. Adams¹, L. Roberts¹, L. Johns¹, D. Hollins², B. Finley²
1. ChemRisk, Chicago, IL, United States.

Diacetyl occurs naturally in a variety of beverages, including citrus juices. Since 2002, airborne exposure to diacetyl has been recognized as a cause of lung damage in some food and beverage workers. Diacetyl has been used in numerous consumer goods, including caramel color and baked goods. The diacetyl concentrations associated with the consumption of food beverages is of concern.

An exposure simulation study was conducted in a small laboratory to determine the concentration of diacetyl as a result of wine consumption. Three different wines were consumed, and the concentration of diacetyl in the headspace samples was measured. Diacetyl was detected in the headspace samples of two of the wines, with concentrations of 17 ppb and 7 ppb, respectively. The concentration of diacetyl in the other wines (Chardonnay and Cabernet Sauvignon) was below the limit of detection (3 ppb).

The proposed NIOSH REL for 8-hr TWA is 5 ppb and 25 ppb for the STEL. These proposed limits are similar to the diacetyl concentrations detected during the wine consumption simulations. The proposed limits are based on the maximum levels of diacetyl that can be safely exposed to without causing harm. The data suggests that the proposed limits make sense.
Consulting Typically Involves...

- Outside clients
- Often short deadlines
- Fast pace of work, daily schedule unpredictable
- Multi-tasking (juggling around 2-6 projects at any given moment)
- Frequent client interactions
- Wide variety of scientific topics
- Publishing data and conclusions
- Becoming rapidly proficient with complex scientific problems
Attributes Of A Good Consultant

HIGH QUALITY OF WORK
(Requiring little supervision)

TIMELY COMPLETION OF WORK
(Requiring something less than a crisis)

TEAM PLAYER
(Someone with whole other want to work with)

HIGH LEVEL OF INITIATIVE
(Works aggressively; goes the extra mile)
Attributes Of A Good Consultant

WORKS INDEPENDENTLY
(Doesn’t require excessive guidance)

THINKS INDEPENDENTLY
(Can logically resolve problems without help)

MATURITY
(Communicates and acts in a professional manner)

WRITING SKILLS
(Writes text in a logical, accurate, concise manner)

PROBLEM SOLVER
(Resolve technical/practical management issues)
Attributes Of A Good Consultant

**SCIENTIFIC KNOWLEDGE**
(Knowledge of wide numbers of issues)

**ACKNOWLEDGED EXPERT**
(Known by colleagues as credible)

**WELL PUBLISHED**
(Recognized as a logical and convincing scientist)

**PRESENCE**
(Personality is readily accepted by clients and peers)
Attributes Of A Good Consultant

THOROUGH
(Presents final copy requiring little further review)

RESPONSIBLE
(Completes all assigned tasks promptly)

VERBAL SKILLS
(Effective communicator in small and large groups)

GOOD PLANNER
(Scopes, anticipates and plans with accuracy)

SUCCESSFUL MANAGER
(Leader, respected by co-workers, on time, on budget, well organized, good communicator, good client relationships, requiring little supervision)
Company Culture -

What Makes Us Different Than Other Firms

- **Autonomy**
  - Request to work on projects you enjoy
  - Manage your own schedule

- **Promotions**
  - Rewards driven employees

- **Team environment**
  - Open door policy

- **Opportunity to work on BD**
  - Work with and bring in new clients

- **Publish**
Benefits

- Competitive Salary
- Education Stipend
- PTO
- Transit
- Cell
- Company Educational Retreat
Other Fun Stuff
Concluding Thoughts – How to Prepare for a Consulting Career

- Consider classes
  - Risk/exposure assessment
  - Epidemiology
  - Environmental toxicology
  - Industrial hygiene, etc.

- Get research experience
- Accept public speaking opportunities
- Publish whenever possible
- Invest in yourself and your career
Thank You!

We sincerely hope you will give us consideration during your career planning process.