Scientific Liaison Coalition Webinar
February 11, 2020
Occupational Exposures and Pregnancy: A Balancing Act

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Disclaimer:

The speaker acknowledges the following activities which may have the potential to reflect a conflict of interest:


b. Member of Scientific Advisory Board for TERIS

c. Research Grant on Preeclampsia from Ortho Clinical Diagnostic.

d. Research Grant on Albunex from Molecular Biosystems, Inc.

e. Research Grant on Rheopro from Centocor, Inc.

f. Research Grant on Enalapril from Merck, Inc.

g. Research Grant on Retinoids from Eastman Kodak, Inc.

h. Expert Witness involving Diazepam, Diethylstilbestrol, Lead, SSRIs, Terbutaline and Birth Defects.

i. Consultant to BioGeneriX A, Roche, Inc and Placental Analytics, Inc.
References:

- Consumer Laboratory – www.consumerlab.com
- www.MotherToBaby.org - Fact Sheets
- www.mothertobaby.urmc.edu
- Reproductive Toxicology
- Association of Occupation and Environmental Clinics (http://www.aoec.org)
- Healthy Homes, Healthy Families, 2015 (https://www.urmc.rochester.edu/childrens-hospital/Childrens-Environmental-Health/Resources.aspx)
Exposures During Pregnancy:

OUTLINE

• Occupational Exposures in Women of Reproductive Age
  (PrePregnant – Pregnant - Breastfeeding)

• TOP TEN

• Action Items and Background –

• Lead and Pregnancy

• Case of the Auto Inspector

• Case of Drug Exposure in the Workplace

• Lactation and the Workplace

• Prevention and Your Actions
Exposures During Pregnancy:

For 12 years, the US offered protection of pregnant women


The Supreme Court of the United States establishing that private sector policies prohibiting women from knowingly working in potentially hazardous occupations are discriminatory and in violation of Title VII and the Pregnancy Discrimination Act of 1978.

CONCLUSION: The workplace must be safe for all employees.
LEAD ISSUES:
Relationship between Blood Lead Levels and Various Biologic Effects

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  B Lamphear et al, Environ Hlth Persp. 113: 894, 2005.
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TOP TEN OCCUPATIONAL/EVIRONMENTAL EXPOSURES –
1. Metals – Lead, Cadmium, Mercury
2. Printing/Nail Salons- Solvents Toluene
3. Zika
4. Shoe manufacturing - Glue/Cement
5. Office Building (AC)
6. Dry Cleaning Shops
7. Metal Cleaning
8. Mold/ Paint
9. Ceramic Manufacturing/ Cancer therapy/ Dental and Vet Care
10. Medical Radiation Exposure/ European Drugs/Radon/Ozonator
### TOP TEN Elevated Blood Lead in Pregnant Women –

1. Remodelling/Repair Home/ Apartment/ Hobbies
2. Workplace – Electronics/Auto Repair
3. Medicines – Ayurvedic Medicines (imported)
5. Ethnic Imported Foods/Pica – Salsa – Candies in clay pots/dirt
6. Hair Dyes - (imported)
7. Workplace - Ceramics Industry/ Bridge Repair
8. Bullets in body and fire range operators and shell makers
9. Water Consumption – Drinking Coolers
10. Urine Drinking
Identification of Exposures and Actions: Example Lead

KEYS TO SUCCESS

1. Engage Patient and her Physician – detailed history and repeat followup (including family if necessary)
2. REPEAT BLOOD LEAD TESTING MONTHLY
3. IDENTIFYING HISTORY OF LEAD EXPOSURE/POISONING
4. INTERVENTIONS – Removal; Therapy; Chelation (last resort)
5. Working closely with Local and State Departments of Health
6. Workplace – Working with employer and patient – for testing and actions
7. Eliminating source of Lead - Remodeling/Repair Home/ Apartment;
8. Water Consumption; Behavior modification for Ethnic Imported Foods – Salsa – Candies in clay pots; Urine Drinking; Hair Dyes
Pregnant and now concerned about exposures in the workplace & home.
Contact her Health Care Professionals:

Exploring on the phone with HCP:
a. Do you have symptoms while at work.

Yes: What are the symptoms and question whether she should continue to work if symptoms reflect hazard until seen by HCP/professionals.

Recommend speaking to your Safety Person at company
1. Indicate you are pregnant and gestational age.
2. Seek the MSDS sheets for chemicals and products you use and others around you
3. Understand the position of the Company concerning Pregnant Employees
4. If you are exposed to chemicals, ask for the chemical monitoring data for the past two years.
5. Bring all information to appointment with Occupational Medicine Physician/Toxicologist.

OBJECTIVE: On behalf of the Patient, work with Health Care Provider and Company to achieve optimally benefit for the pregnant Employee.
Total Worker Health™

Is a strategy integrating occupational safety and health promotion with health promotion to prevent worker injury and illness and to advance health and well-being.

Occupational safety and health programs and workplace health promotion efforts traditionally have operated in silos—that's finally changing. An emerging body of evidence recognizes that separate approaches are not as effective as integrated approaches that consider worker safety, health, and well-being at work and beyond the workplace. Today, more employers are making the connection that a safe, healthy, and engaged workforce affects their bottom line.

How Do I Get Started?

Visit the NIOSH Total Worker Health website at www.cdc.gov/niosh/TWH/LetsGetStarted.html. Here you will find practical tools and evidence-based guidelines for creating a culture of Total Worker Health.

Hidden Costs of Poor Health®

Opportunities for Employers

TO CREATE A SAFER AND HEALTHIER WORKFORCE

For a full list of reference, please visit: www.cdc.gov/niosh/vision/default.htm

Disclosure: Members of any company or product does not constitute endorsement by the National Institute for Occupational Safety and Health (NIOSH).

To receive documents or more information about occupational safety and health topics, contact NIOSH:

Telephone: 1-800-CDC-NIOSH (1-800-232-6647)
TTY: 1-866-868-1783
CDC INFO/WHO: 1-877-INFOWHO

or visit the NIOSH website at www.cdc.gov/niosh

For updates on TOTAL WORKER HEALTH, subscribe to our on-line newsletter TWH on Action by visiting www.cdc.gov/niosh/twh/newsletter

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February 2015

Safer • Healthier • People™

DEPARTMENT OF HEALTH AND HUMAN SERVICES

Centers for Disease Control and Prevention

National Institute for Occupational Safety and Health

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ACTION ITEMS:
RECREATIONAL AGENTS
Alcohol/Solvents
Tobacco
Nicotine Replacement
Cocaine
Methamphetamine
Marijuana
Opioids
OTHER ACTION ITEMS:
Herbals
Lead
Plasticizers
Autism
- Factors associated – Thalidomide, Ethanol, Valproic Acid, Misoprostol, Retinoids
- Factors NOT associated - Vaccines, Mercury, Terbutaline for preterm labor
ORGANOGENESIS

Clinical Recognition of Pregnancy

Pregnancy Tests first positive

Last Menstruation

days after ovulation

after last menstruation

Modified from J. Manson
RETINOID TERATOGENESIS

RETINOID EMBRYOPATHY

- Microtia, anotia (Ear)
- Mandible small, Cleft Palate
- Hydrocephalus, Microcephaly
- Cardiac - Conotruncal, Aortic Arch
- Thymus - absent, small
- CNS Dysfunction

MECHANISMS AND ASSOCIATIONS

- Cranial Neural Crest Cell Migration
- Third to Fifth Week after Conception
- Embryopathy similar in Non-Human Primates
The Chemical Environment

- > 82,000 synthetic chemicals on EPA inventory of chemicals manufactured in U.S. today
- Most first synthesized in the past 50 years
- ~ 700 new chemicals introduced each year
- Few chemicals tested for basic toxicity
Some Workplace Exposures

- Auto Repair and inspector
- Nurses and exposures to High Risk Meds
- Secretary in Applique factory for shirts
- Shoe factory Gluing Shoes
- Widget factory and the pregnancy line
- Painting the Brooklyn Bridge
- Cleaning NYC Metro Car Graphics
- Silver recovery personnel
- Lead Exposure in a ceramics factory
- Hazmat employee
- Chemist in Research laboratory
- Dry cleaning worker
LEAD in the United States
LEAD - Calcium
Blood Lead Monitoring
Water, Soil,
Remodeling, Auto Repair, Paint Chips, Foods (ethnic), Clay, Urine, Ammunition, Solder,
Manufacturing, Jewelry, Hair Coloring,
Ayurvedic Medicine, Herbs
**LEAD ISSUES:**

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The Effect of Removing Lead From Gasoline

Change in Blood Lead Levels in Relation to a Decline in Use of Leaded Gasoline in the U.S., 1976-1980

Modified from Annest et al. NEJM 1983; 308;1373-7.
Mandatory Lead Screen
For Pregnant Women

Why only Two States of the 50?
NEW YORK STATE LAW
Risk Assessment for Lead in Pregnant Women
1995 - Present

Maternal Lead Screening

A. Questionnaire to determine need for Blood Lead Screening

B. Blood Lead Screening
NEW YORK STATE LAW
Risk Assessment Questions for Pregnant Women
to Determine whether Blood Testing for Lead

Do you or others in your household have an occupation that involves lead exposure (Lead Abatement, Use of lead based paints, Home renovations, recycling metals, manufacturing/ installation of plumbing components, brass/copper foundry, using firearms, pottery making, bridge, tunnel and elevated highway construction, automotive repairs, battery manufacturing)?

Do you ever eat paint chips, clay or plaster?

Do you live in an old house with ongoing renovations?

Has your home ever tested positive for lead in the water?
NEW YORK STATE LAW
Risk Assessment Questions for Pregnant Women
to Determine whether Blood Testing for Lead

Do you use any traditional folk remedies or cosmetics that are not sold in regular drug stores (Alkohi, Azarcon, Bali goll, Ghazard, Greta, Pay-loo-ah)?

Do you or others in your household have any hobbies or activities likely to cause lead exposure (Stain glass, copper enameling, bronze casting, pottery or ceramic making, casting ammunition, fishing weights or lead figurines, jewelry, electronics, liquor distillation)?

Do you use non-commercially prepared pottery or leaded crystal?
New York State Action Levels for Lead Poisoning in Pregnant and Postpartum Women

Blood Lead Level  •  Action

0-9 ug/dl  Provide Information on Sources of Lead and How to avoid

10-19 ug/dl (Mildly Elevated)  Retest Blood Lead Level to Determine if Lead is Increasing. If Increasing seek consultation with TIS, or Other Regional Resource Centers. If No Upward Trend, Repeat Blood Lead near term.

New York State Action Levels for Lead Poisoning in Pregnant and Postpartum Women

Blood Lead Level  •  Action

20-44 ug/dl (Moderately Elevated)  ○ Retest Blood Lead Level to Determine if Lead is Increasing. If Increasing seek consultation with TIS, or Other Regional Resource Centers. If Increasing, Seek Consultation for Further Risk Reduction.

45 ug/dl or greater (Severely Elevated)  ○ Retest Blood Lead Consult with A Regional Lead Poisoning Prevention Center. Provide Counseling on Possible Sources. Refer Women to Local Health Agency. Consult TIS

Lead in Bone

- > 95% of the body burden of lead is in the skeleton.
- Half-life of Lead in bone is 20-30 years.
- Lead is released from bone during pregnancy at increased rate.
Increased Calcium Demand in 3rd Trimester Increases Bone Lead Resorption

Mandatory Lead Screen For Pregnant Women in New York State

- 1st Prenatal Visit for all Women
- 3rd Trimester for At Risk Mothers
Case of the Auto Inspector
31 year old Gravida 6 Para 3 # living children 3; US Born

- LMP – 5/27. At visit 29.2 wks
- TWINS. (18 week anatomical ultrasound Normal)
- Rents home – 3 yrs. < 1975 built, No renovations, Good shape, no environmental issues.
- Blood Lead <1 ug/dl
- Typical American Diet – No Fish including Tuna, no liver, Celiac issues, Low carb diet 3 meals/ day
- Husband – Community Support Specialist for County – US Born
Patient History (2):

- Dealer Coordinator/Billing Accountant (50/50) – 3 yrs
- UNDERCOATING CAR COMPANY
- Referred by HCP
- No Specific Symptoms related to work (3 yrs ago had headaches for 3 months); Morning Sickness (nausea, little vomiting) not associated with work or days of the week. Now abated. Had with all previous pregnancies.
- Strong odors especially coming from undercoating bays (Gradient of odors based upon distance from bays.
- No other pregnant women in shop or have worked in shop.
Car Undercoating Shop, Rochester New York
Patient History (3):

- Stoddard Solvent – Mineral Spirits. CAS 8052-41
- Petroleum Hydrocarbon Blend. Asphalt. 8052-42-4
Agent Summary

Quick take: Stoddard solvent does not interfere with embryo development in rats at maternal exposure levels up to 950 ppm 6 hours/day. An association between Stoddard solvent exposure during pregnancy and some congenital heart defects was reported in one study.

Stoddard solvent (white spirit), a mixture of straight and branched paraffins, naphthenes #1676, and alkyl aromatic hydrocarbons, is used as an extraction, cleaning, and degreasing solvent in painting, dry cleaning, aerosols, wood preservatives, asphalt products, lacquers, and varnishes. Stoddard solvent varies in composition and boiling range. Common variants are Types I and IIC (3). One suggested standard for human inhalation exposure to this mixture is 1.2 mg/L (200 ppm); however, this standard is based on general toxicology studies that did not include tests of reproductive success (1).

Experimental animal development

Exposure of pregnant rats to up to 950 ppm 6 hours/day for the period of embryogenesis and for most of gestation did not result in an increase in birth defects in the offspring (2). There was, however, an increase in maternal toxicity and a decrease in weight of the offspring. The reduced weight of the pups appeared related to decreased maternal weight gain and not a specific effect of Stoddard solvent on embryonic or fetal development.

Human reports

A study of potential associations between congenital heart defects and maternal exposures to solvents during pregnancy found an increased risk of several specific heart defects with maternal Stoddard solvent exposure (4). These defects were d-transposition of the great arteries (odds ratio = 2.0, 95% CI 1.0–4.2), right ventricular outflow tract obstruction defects (odds ratio = 1.9, 95% CI 1.1–3.3), and pulmonary valve stenosis (odds ratio 2.1, 95% CI 1.1–3.8). The data were obtained as part of the National Birth Defects Prevention Study, with estimates of maternal occupational exposure to organic solvents for study participants delivering infants between 1997 and 2002. The study participants included 2951 control mothers and 2047 congenital heart disease case mothers (4). There were no increased risks of neural tube defects, orofacial clefts (5), or fetal growth restriction (7) associated with Stoddard solvent in this study.

Reproduction

A National Toxicology Program study in mice reported reduced sperm motility in males dosed by inhalation with 2200 mg/m³ Stoddard solvent IIC, 6 hours/day, 5 days/week for 14 weeks (3). An
Patient History (4):

- Duties – inspect the undercarriage of car, wheel wells for coating. She tries to wear a mask (charcoal layered) but hyperventilates now when using.
- Must bend over and get down on her knees to inspect. Car on Pavement. She had been unable to stand back up and has “tipped over” on occasion.
Patient History (5):

- Duties – inspect the undercarriage of car, wheel wells for coating. She tries to wear a mask (charcoal layered) but hyperventilates now when using.
- Must bend over and get down on her knees to inspect. Car on Pavement. She had been unable to stand back up and has “tipped over” on occasion.

RECOMMENDATIONS
Case Of Drug Exposure in the Workplace
Case of the Workplace
Drug Exposure

Obstetrician and Pregnant women call MTB UR Medicine; Hospital calls RKM office; with concern for employees exposed to a drug, Ribavirin, following inhalation therapy of an pediatric patient. Two employees are pregnant.

Question: Are there risks for these employees, especially the pregnant employees?

RESPONSE?
Case of the Workplace
Drug Exposure

Question: Are there risks for these employees, especially the pregnant employees?

RESPONSE?

• Patient Information – What do we need to know?
• Ribavirin - What do we know?
• What are the exposures?
• Risk Assessment for Exposures
• Recommendations
Case of the Workplace
Drug Exposure

Question: Are there risks for these employees, especially the pregnant employees?

RESPONSE?

- Patient Information –
  Patient 1 - Registered Nurse working on inpatient oncology unit.
  27 weeks of gestation at time of exposure.
  Now 27 weeks of gestation
  Patient 2 - Physician Assistant working on inpatient oncology unit.
  14 weeks of gestation at time of exposure.
  Now 17 weeks.
Case of the Workplace
Drug Exposure

Question: Are there risks for these employees, especially the pregnant employees?

RESPONSE?

• Patient Information –
• Ribavirin - What do we know?
  X - Labeled Drug -
  Inhalation exposure was to be conducted in a negative pressure room.
  Conducted in positive pressure room.
• What are the Exposures?
  Patient 1 did not enter the room.
  Walked by room numerous times.
  Patient 2 did not enter the room.
  Walked by room numerous times.
**Ribavirin**

The nucleoside analog ribavirin inhibits both DNA- and RNA-viruses, displaying a relatively broad antiviral spectrum experimentally. Among other applications, it is used to treat respiratory syncytial virus (RSV) infections in infants, and, combined with $\alpha$-interferon (Chapter 2.12), against hepatitis C. Ribavirin has teratogenic and mutagenic effects in animal experiments.

Nine women who were treated during the second half of pregnancy for severe measles delivered healthy infants (Atmar 1992). A woman treated for SARS (severe acute respiratory syndrome) in the first trimester with ribavirin by injection for 3 days gave birth to a normal child (Rezvani 2006).

In its Pregnancy Registry, the manufacturer noted eight women with ribavirin exposure in the first trimester, and 77 women with exposure within 6 months of the last menstrual period (Roberts 2010). The authors found no evidence of a teratogenic risk for humans.

In summary, current data are insufficient for a risk assessment for ribavirin. An embryo- or fetotoxic risk is not apparent with the available case reports.
Agent Summary

Quick take: Ribavirin interferes with embryo development in experimental animals. Case reports of normal outcomes of exposed human pregnancies have been published. A pregnancy registry exists.

Ribavirin is an antiviral agent. The aerosol form of ribavirin (Virazole) is indicated in the treatment of infection with respiratory syncytial virus (RSV) in infants and young children. Orally administered ribavirin is also available as a single agent (Rebetrol; Moderiba)
Experimental animal development
Ribavirin has been found to be teratogenic and/or embryolethal in several species of animals (8). In hamsters, ribavirin was associated with defects of the limbs, eyes, and brain (1,2); in rats, defects of the brain and eyes predominated (1). Intraperitoneal administration of ribavirin during gestation induced malformations of the craniofacial and limb bones of mice (3).
Human pregnancy reports
Because of its frequent association with adverse effects on pregnancy in animal experiments, the marketing approval of ribavirin specified that it be avoided in women or girls who are pregnant or might become pregnant within four weeks after exposure to the drug (4). A ribavirin pregnancy registry is recruiting women who have received the drug during pregnancy or within 6 months prior to conception.


The infants of nine women who were treated with ribavirin for severe measles during the second half of pregnancy did not have an increased incidence of anomalies (11). Various additional case reports have described successful pregnancies that included ribavirin exposure after maternal or paternal use of this agent (15-21,23-25). Commentators have suggested that the pregnancy warning on products containing ribavirin is excessive, particularly with regard to exposures derived through semen (22).
Human pregnancy reports
A 2010 report from the first 5 years of enrollment in a registry for pregnancy-related exposures in females and males identified 49 births with maternal exposure and 69 births with paternal exposure among whom there were 6 children with malformations (9). Three malformed children each were born after maternal and paternal exposure. There was no evident pattern of malformations.

Concerns regarding exposure in health care workers
Concern has been expressed regarding the possible exposure of hospital staff to this drug while it is administered to infants (5). A study of 19 nonpregnant nurses who were caring for infants being treated with ribavirin did not identify measurable concentrations of ribavirin in blood or urine (6). Based on these findings, the Canadian Paediatric Society concluded that ribavirin administration is apparently safe for hospital personnel (5,10). A study performed by the Occupational Health Surveillance Program of the California Department of Health
Services evaluated blood and urine concentrations of ribavirin in exposed health care workers. Eight nurses and two respiratory therapists submitted a total of 30 blood and urine samples. Blood samples were evaluated for serum and RBC ribavirin, because the drug is concentrated in erythrocytes. All samples were negative except for one RBC sample that showed a ribavirin concentration of 0.44 mcg/mL in a nurse 5 days after the first shift in which she cared for a patient receiving ribavirin in an oxygen tent (7). Because of the potential absorption of this agent by a health care worker, an editorial note accompanying this report in MMWR recommended that health care workers who are pregnant or may become pregnant "should be advised of the potential risks of exposure during direct patient care..." (7). The editorial comment included a mathematical calculation that a worker with 8-12 hour exposure to ribavirin in health care settings might absorb more than 1% of the dose shown to be embryotoxic in animal experiments. Similar estimates have been compiled by others (12). A subsequent investigation using 14 volunteers exposed to ribavirin produced data supporting this estimate of exposure (13).
Case of the Workplace
Drug Exposure

Question: Are there risks for these employees, especially the pregnant employees?

RESPONSE?

- Patient Information
- Ribavirin
- What are the Exposures?
- Risk Assessment for Exposures

- Recommendations
Case of the Workplace
Drug Exposure

Question: Are there risks for these employees, especially the pregnant employees?

RESPONSE?

• Patient Information –
• Ribavirin - What do we know?
  Inhalation exposure was to be conducted in a negative pressure room.
  Conducted in positive pressure room.
• What are the exposures?
  Patients 1 and 2 did not enter the room.
  Walked by room numerous times.
Case of the Workplace
Drug Exposure

Question: Are there risks for these employees, especially the pregnant employees?

RESPONSE?

• Risk Assessment for Exposures
  What additional information needed?

• Recommendations
Case of the Workplace
Drug Exposure

Question: Are there risks for these employees, especially the pregnant employees?

RESPONSE?

- Risk Assessment for Exposures
  What additional information needed?

  Did the pregnant women have symptoms?
  Was there an exposure in the hall?
  How can we estimate exposures?
Case of the Workplace
Drug Exposure

Question: Are there risks for these employees, especially the pregnant employees?

RESPONSE?

- Risk Assessment for Exposures
  What additional information needed?

  Did the pregnant women have symptoms? **NO**
  Was there an exposure in the hall?
  How can we estimate exposures? **Test Room**
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<tr>
<td>15 - MID HEIGHT RIGHT SIDE DOOR</td>
<td>6946395</td>
<td>4889316</td>
<td>812590</td>
</tr>
<tr>
<td>16 - MID HEIGHT CENTER DOOR</td>
<td>33168241</td>
<td>23340876</td>
<td>2163730</td>
</tr>
<tr>
<td>17 - MID HEIGHT CENTER DOOR</td>
<td>13670660</td>
<td>8618191</td>
<td>1049199</td>
</tr>
<tr>
<td>20 - IN ROOM WITH SMOKE</td>
<td>724181615</td>
<td>500361852</td>
<td>14420391</td>
</tr>
<tr>
<td>23 - ROOM AIR RETURN GRILLE</td>
<td>476820742</td>
<td>317422699</td>
<td>21818107</td>
</tr>
</tbody>
</table>
Statistics (average of 0.5, 1.0, and 3.0 micron values)

<table>
<thead>
<tr>
<th>Location</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>At floor (sweep)</td>
<td>2203792</td>
</tr>
<tr>
<td>At Breathing Zone (mid height)</td>
<td>6064450</td>
</tr>
<tr>
<td>At Grill (the room exhaust)</td>
<td>272020515</td>
</tr>
<tr>
<td>Above bed (in room with smoke)</td>
<td>412987952</td>
</tr>
</tbody>
</table>

Explanation of statistics:
The average room value varies because we could not generate continuous smoke.
The value at the grill varied because particle generation was not consistent, lower than room value possibly because of HEPA filter.
The door sweep is significantly lower than other values. May be due to HEPA filter sweeping clean air at floor level.
Breathing zone is from filtered return air from patient rooms and other rooms, from personnel doing activities in corridor.

DATA SHOW NO SIGNIFICANT PARTICULATES WOULD HAVE REACHED THE CORRIDOR
Case of the Workplace
Drug Exposure

Question: Are there risks for these employees, especially the pregnant employees?

RESPONSE:

- Recommendations
Case of the Workplace
Drug Exposure

Question: Are there risks for these employees, especially the pregnant employees?

RESPONSE?

• Recommendations
  Meet with all employees (24) in exposure area
  Report results of testing and information on Ribavirin
  Reassure Pregnant Women that their risk from Ribavirin to the pregnancy is NOT > than the Background Risk of 3-4%.
BREASTFEEDING AND THE WORKPLACE
Fair Labor Standards Act (FLSA). Section 7
2010: Amended to require employers to provide basic accommodations, such as time and space, for breastfeeding Mothers at work.

a. Reasonable Break Time for an employee to express breast milk for 1 year after birth.

b. A place other than a bathroom, that is shielded from view and free from intrusion from coworkers and the public.

c. An employer shall not be required to compensate an employee receiving reasonable break time to express milk.
Information for Women in the Workplace
MotherToBaby.org

- Ionizing Radiation in the Workplace
- Mold
- Lead
- Cytomegalovirus
- Carbon Monoxide
- Cigarette Smoke
- Alcohol
- Hyperthermia
- Perchloroethylene (PCE)
- Paint
- Pesticides

- Reproductive Hazards of the Workplace; Tips for job Safety
- BreastFeeding following a natural disaster
- Working as a Veterinarian or Vet Technician
- Working in a Nail Salon
- Dental Workers (soon to be on line)
Information for Women in the Workplace
MotherToBaby.org
LactMed@NIH
ReproTox.org
National Lactation Study Center (585) 275-0088
BreastFeeding A Guide for the Medical Profession 8th, Lawrence and Lawrence
Drugs During Pregnancy and Lactation: Treatment Options and Risk Assessment, Schaefer, Peters, Miller eds
Drugs in Pregnancy and Lactation. Briggs Freeman
PREVENTION
Folic Acid and Multivitamins
Prevention of Neural Tube Defects and Cardiac Defects
400 ug / day PRECONCEPTIONALLY

Grains (including Corn Meal) are fortified; however, not enough!

IT WORKS!!
Some Workplace Exposures

- Auto Repair and inspector
- Nurses and exposures to High Risk Meds
- Secretary in Applique factory for shirts
- Shoe factory Gluing Shoes
- Widget factory and the pregnancy line
- Painting the Brooklyn Bridge
- Cleaning NYC Metro Car Graphics
- Silver recovery personnel
- Lead Exposure in a ceramics factory
- Hazmat employee
- Chemist in Research laboratory
- Dry cleaning worker