# Overview of Occupational Health History Taking

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**September 21, 2025**

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# What is Occupational Medicine?

- **Focuses on the diagnosis and treatment of work-related illnesses and injuries**
- **It is the *etiology/exposure* rather than the *pathology* that distinguishes illnesses as occupational disorders**
- **Occupational medicine is unique as a specialty because of this focus**

# Occupational/Environmental Disease

***Disease:*** **Injury, illness, physiologic or anatomic dysfunction, alteration in general state of health**

- ***Occupational*: Caused or made worse by work or by exposures in the workplace**
- ***Environmental*: Caused or made worse by exposures in our ambient media (air, water, soil, etc)**

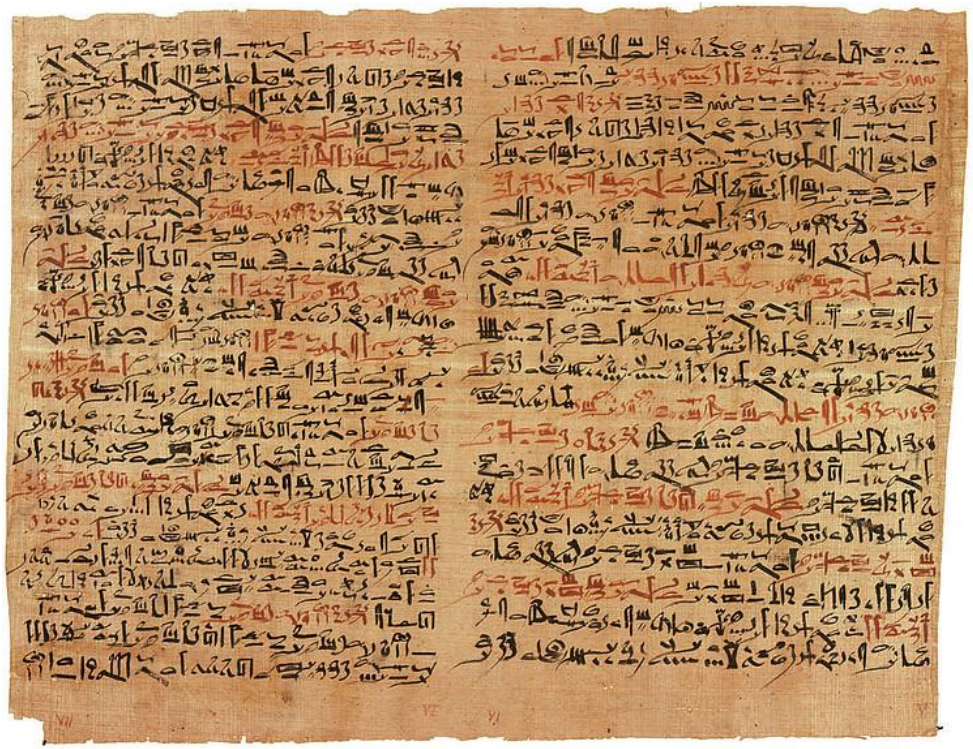
**Management of occupational illnesses is generally the same as management of non-occupational illness with the addition of having to address the environmental or work related exposures that caused or contributed to the problem**

# Occupational Disease in Egypt- (before Hippocrates)

**Documented as far back as 3000BC**

1600 BC:  Edwin Smith Papyrus documents injured pyramid workers receiving medical care and compensation

**Original author thought to be Imhotep, an Egyptian architect and physician from the 27th century BC**



# Ramazzini -1700

**“Men and women who sit while they work at their job, become bent, hump-backed….**

**They are not really hump-backed so much as round-shouldered like monkeys…the vertebral ligaments are pulled apart…so that it becomes impossible for them to return to the natural position”**

# Dr. Alice Hamilton

1st American physician to devote career to diseases of industrial workers

1st woman appointed to medical faculty at Harvard (1919)


**Investigated**

- lead poisoning
- “phossy jaw” in matchmakers
- explosives toxicity in WWI munitions workers
- Mercury (Hg) toxicity in hatters
- “dead fingers” in workers using jackhammers

# Occupational Health Regulations

## United States 1970:  Occupational Safety and Health Act

- Established minimum federal standard for worker protections to which all states have to adhere
- States can pass guidelines that are stricter if they so choose
- 22 States have their own OSHA-approved plan

## International Labor Organization 2009:Program on Occupational Safety and Health and the Environment in the Caribbean

- Established to promote international labor standards and provide support the governments of Caribbean States in improving occupational health and safety
- Attempted to address the lack of legislative framework and resources to promote worker safety across the English and Dutch speaking Caribbean.

# Occupational safety and health regulations and laws in six Caribbean countries, as of 2012–2013

**TABLE 1. Occupational safety and health regulations and laws in six Caribbean countries, as of 2012–2013.**

| | Jamaica | The Bahamas | Barbados | Saint Lucia | Trinidad and Tobago | Grenada |
|---|---|---|---|---|---|---|
| Main OSH legislation | The Factories Act of 1961 (8) | The Employment Act of 2001 (12) | The Factories Act of 1986 (16) | The Employee (Occupational Health and Safety) Act of 1985 (18) | The Occupational Health and Safety Act of 2004 (21) | The Employment Act of 1999 (28) |
| Additional OSH regulation and legislation | Building Operations and Works of Engineering Construction (9)<br>The Docks safety, health and welfare regulations (10)<br>Green paper national workplace policy on HIV/AIDS (11) | The Minimum Wage Act of 2002 (13)<br>The Industrial Relations Act of 2002 (14)<br>The Health and Safety at Work Act of 2002 (15) | The Accidents and Occupational Diseases (Notification) Act (17) | Contracts of Service Act (19)<br>Equality of Opportunity and Treatment in Employment and Occupation Act (20) | Equal Opportunity Act (22)<br>Industrial Relations Act (23)<br>The Maternity Protection Act of 1998 (24)<br>Minimum Wages Act (25)<br>Retrenchment and Severance Benefits Act (26)<br>Trade Unions Act (27) | Labor Relations Act, 1999 (Amended in 2000 and 2003) (29) |
| Ratified C155[a] | No | No | No | No | No | Yes (July 2012) |

***Source:*** Created by the authors, using results from the study.

[a]C155 = International Labor Organization's C155 - Occupational Safety and Health Convention, 1981 (No. 155), which provides a framework that supports a safety and health culture at work.

# International Labor Organization Project Overview

- **ILO Program on Occupational Health, Safety, Health and Environment in the Caribbean**
- **Initiated in 2011 with funding from the ILO**
- **Involved stakeholders from CARICOM, Pan-American Health Organization, academic institutions, and local labor organizations**
- **Supported academic institutions to perform occupational health and safety trainings including industry-specific training for workers and employers.**
- **Promoted industry-specific training for labor inspectors**
- **Promoted awareness of international labor standards and encouraged individual countries to amend their OSH legislation and regulations accordingly**

Source: https://www.ilo.org/projects-and-partnerships/projects/ilo-programme-occupational-safety-and-health-and-environment-caribbean

# Major Industries in the Caribbean

- Tourism
- Construction
- Agriculture
- Oil and Gas (Trinidad and Tobago)
- Mining (Bauxite in Jamaica)
- Offshore Banking

# Occupational Health and Safety Statistics in the Caribbean

## Occupational Injury/Illness

**Trinidad and Tobago:  64.3 per 100,000 workers (2016)**

**Belize: 909.5 per 100,000 workers (2019)**

**Puerto Rico: 1.9 per 100 workers (2023)**

**US Virgin Island: 0.7  per 100 workers (2023)**

**Barbados: 0.4 per 100 workers (2016)**

**US (total):  2.7 per 100 workers (2023)**

## Occupational Fatalities

**Trinidad and Tobago:1.9 per 100,000 workers (2016)**

**Belize: 5.9 per 100,000 workers (2022)**

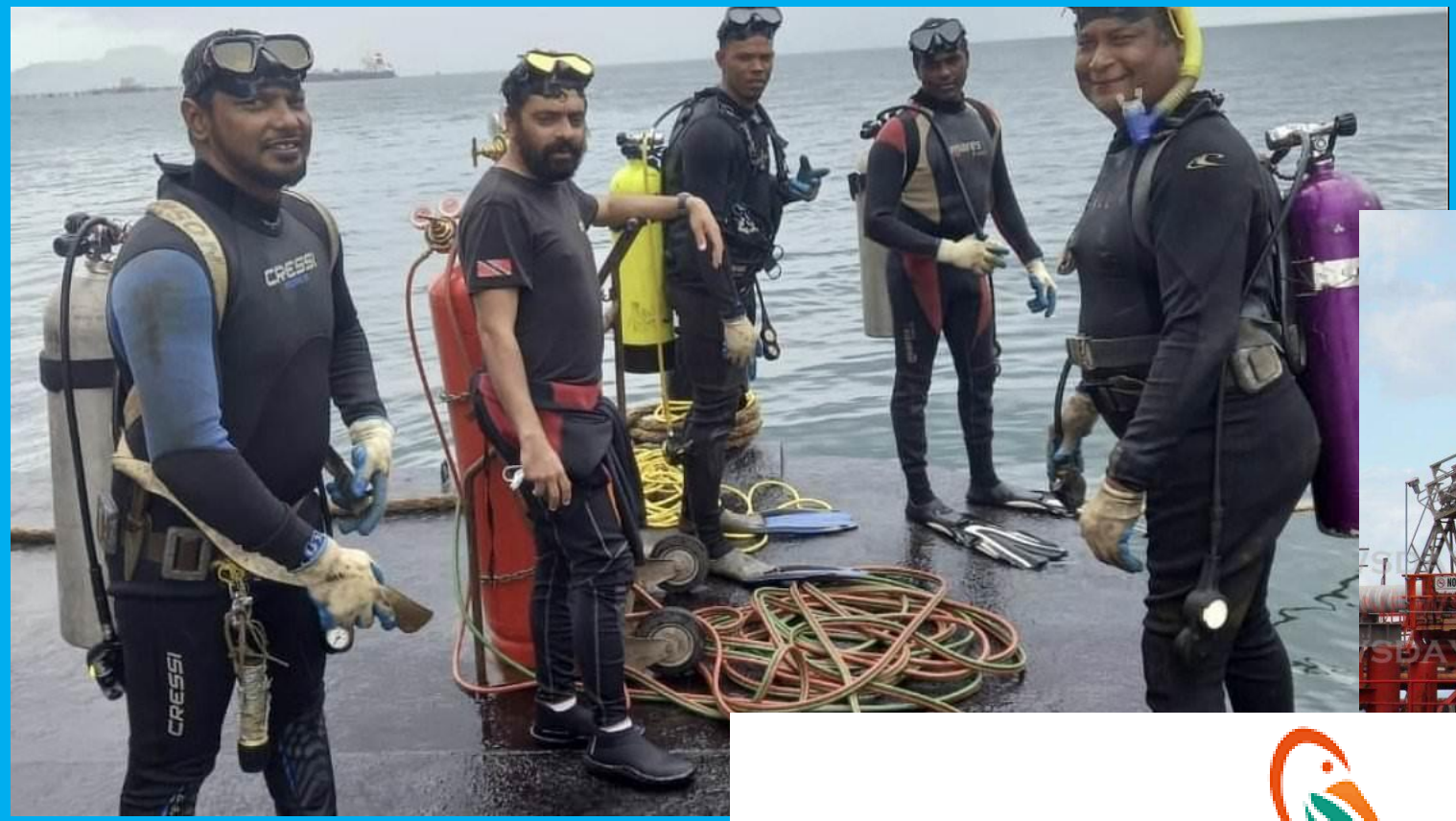
**Puerto Rico: 1.7 per 100,000 workers (2021)**

**US Virgin Islands: 14.8 per 100,000 workers (2021)**

**Barbados: 0.75 per 100,000 workers (2016)**

**US (total): 3.7 per 100,000 workers (2023)**

# PARIA FUEL TRADING COMPANY 2022 DIVING TRAGEDY





paria
FUEL TRADING COMPANY

# So what goes into an occupational history anyway???

# How is occupational causality determined?

## Occupational Injuries

- Occurs from a direct, specific incident or group of identifiable incidents at work usually an acute trauma

- Example: A laborer tries to lift a heavy bag of concrete and injures his back

## Occupational Diseases

- Occurs from an exposure to a certain condition during the course of the work day.
  - Can be short term (e.g smoke exposure from something that ignites or a chemical spill).

    OR

  - Long term (e.g a farmer being exposed to pesticide for many years and get cancer OR a laborer who develops chronic knee pain at a relatively young age from doing heavy lifting over long term.)

# History and Presentation

- Clinical Presentation (specific signs and symptoms)
  - Questions much like the history one takes with any chief complaint
- Aggravating and Alleviating Factors
  - Ask for specific job tasks that make symptoms worse or better
  - Ascertain alleviating factors (e.g. do symptoms improve when away from work)
- **Pertinent medical history to rule out other causes of patient's symptoms!!**
- Helps establish temporality/timeline

# Occupational history includes where a person works and what specific activities they do

**“A secretary” may sit in an office next to where pesticides are being manufactured**

**“An electrician” may be repairing equipment in a factory where lead batteries are being made**

# Brief Exposure Assessment: Workplace

- Short list of current and past jobs
- Place of employment (industry and job site location)
- Ask them about what they are most commonly exposed to at work??
- Products manufactured (if applicable)
- Job task descriptions
- Workstation design
- Handling of hazardous materials
- Existing operating and clean-up protocols
- Recent changes in protocols or procedures at work
- Smoking, medications and recreational drug use
- Presence or absence of co-workers with similar symptoms

# Evaluate and exclude exposures at home

- Location of the residence
  - Home built on reclaimed land used for previous purposed
- Age and condition of home structures
  - Peeling paint
  - Cooking Fuel (charcoal vs gas)
  - Home Renovations
- Type of insulation, waterproofing materials and ventilation
- Recent damage (i.e from natural disasters)
- Food/Water/Supplements
- Hobbies
- Family member occupations
  - Parent/spouse/working children bringing home contaminated clothing/equipment

# Pre-Existing Conditions and Occupational Exposures

- An underlying condition made worse by a specific work-related exposure or incident may also be considered as being occupational.
  - Example 1: someone with asthma who was using albuterol as needed only before exposure, but exposure now resulted in patient needing ICS/LABAs long term)
  - Example 2: A person with an old knee injury from childhood who initially recovered and mostly asymptomatic and then re-injured the same knee working as a bricklayer.

# Consider an underlying occupational cause of disease when:

- Patient's disease that does not respond to conventional medical treatment.
- Patient has different demographic characteristics than one would expect for a certain diagnosis (e.g age or gender)
- Commonly recognized causes of illness have been eliminated from the differential diagnosis

- Consider occupational agents that can produce the same symptoms, signs and pathologic consequences as more "common" disease processes.

**Resolution of disease may not be possible if the patient's occupational exposures are not removed or significantly mitigated**

**Photo Credit: Worker in Dominica building a community center after Hurricane Maria (taken from 2024 NYT article)**

# Case Example #1: Occupational Injury:  Fall from height on worksite

# Acute Musculoskeletal Injury: Traumatic Fall

- 26-year-old construction worker with 20-foot fall from scaffolding
- Non-tobacco user without prior medical history
- Admitted to hospital with concussion and cervical and thoracic spine compression fractures
- CT scan of lumbar spine was negative
- Patient presented to my clinic 4 months after the incident since he was out of work and seeking Worker's compensation wage replacement and treatment for injuries.
- Physical exam findings
  - Ambulating but with significant difficulty
  - Pain with palpation along cervical and thoracic spine
  - Decreased range of motion
- Currently receiving physical therapy and oral pain medication
- Remains unable to work

# Occupational Hazards Associated with this Case

- Lack of harness/fall protection
- Scaffolding not well maintained
- Intimidation by employer/supervisor

# OSHA (USA) Regulations Related to Fall Protection

“1926.104(b): Lifelines shall be secured above the point of operation to an anchorage or structural member capable of supporting a minimum dead weight of 5,400 pounds.”

“1926.104(c): Lifelines used on rock-scaling operations, or in areas where the lifeline may be subjected to cutting or abrasion, shall be a minimum of 7⁄8 -inch wire core manila rope. For all other lifeline applications, a minimum of 3⁄4 -inch manila or equivalent, with a minimum breaking strength of 5,000 pounds, shall be used.”

“**1926.104(d): “Safety belt lanyard shall be a minimum of 1⁄2 -inch nylon, or equivalent, with a maximum length to provide for a fall of no greater than 6 feet. The rope shall have a nominal breaking strength of 5,400 pounds.”**

“1926.104(f)All safety belt and lanyard hardware, except rivets, shall be capable of withstanding a tensile loading of 4,000 pounds without cracking, breaking, or taking a permanent deformation.”

**[44 FR 8577, Feb. 9, 1979; 44 FR 20940, Apr. 6, 1979, as amended at 84 FR 21577, May 14, 2019]**
**Source:** https://www.osha.gov/laws-regs/regulations/standardnumber/1926/1926.104

# SAFETY FIRST!!!

# Return to work/Modified Duty Accommodation

- Important to start discussing return to work after immediate acute phase of patient's injury
- Communication through documentation with employer if possible about temporary work restrictions
- Long term benefits of temporary modified duty include:
  - Faster recovery from injury/illness
  - Easier transition back to original job duty tasks
  - Maintenance of earnings and benefits
- Caveat—sometimes not safe or practical but having the conversation is important

# Case Example #2: Occupational Disease—Occupational Lung Disease

# Case: 66 year old man with severe cough and shortness of breath

**Symptoms**

- Shortness of breath beginning in 2022
- Wet, productive cough
- Fatigue/weakness
- Limited exercise tolerance/ability to walk up and down stairs or incline

**Occupation: Handyman (2014-2022)**

Exposure Duration: 40 hours per week x 8 years (minimum)

Job functions:

Repainting and plastering walls/floors of school buildings

Scraping off old paint and primer

**Pertinent Negative History**

- Never smoker
- No history of palpitations or lower extremity swelling
- Negative cardiology work-up/evaluation
- No history of prior respiratory infections/symptoms in childhood/early adulthood

**Exposure Summary**

Patient worked with compounds listed below in enclosed spaces without ventilation

- Epoxy Resins
- Joint compound plasters
- Paints (semi-gloss, oil-based, “regular” paint)
- Mold/Dust

# Clinical Course

## Symptoms/Physical Exam

**Persistent, productive cough and shortness of breath, worse with environmental exposures or when he gets infections**

**Limited exercise tolerance**

**Wet cough during all follow-up visits with decreased air movement or wheezing**

**Medications:**

- **Breztri (budesonide/glycopyrrolate/formoterol fumarate— ICS-LAMA-LABA triple therapy)**
- **Montelukast 10 mg (leukotriene receptor antagonist) at night**
- **Albuterol HFA and Albuterol Nebulizer as needed**
- **Multiple course of prednisone and antibiotics per year**

## Diagnostic Testing

Negative Hypersensitivity Pneumonitis panel

June 2023 chest CT (no change from 2022): *"No significant interval change compared to prior study. Mild hyperinflation of lungs. No significant parenchymal or pleural abnormality. Stable small, calcified mediastinal and hilar lymph nodes. No bulky lymphadenopathy"*

6/26/2023 PFTs: *FEV1%: 63% pre bronchodilator and 71% post bronchodilator , FEV1: 1.85L (59%) pre bronchodilator and 2.08 L (64%) post bronchodilator + 12% change, FVC: 2.92 L (68%) pre bronchodilator and 2.95 L (68%) Impression: Moderate to severe obstruction with positive response to bronchodilator*

**1/3/2025 PFTs: *Post bronchodilator FVC was 40% of predicted value, FEV1% was 33% of predicted value, FEV1/FVC was 81% of predicted value***

# Consults

- Pulmonology
- Otolaryngology (ENT)
- Industrial Hygienist Assessment of his occupational exposures

# Patient Provided Photos


# What are Epoxy Resins/Hardeners??

**Product Description/Usage**

- Two part polymer system consisting of base resin and curing agent
- The base and resin are mixed prior to use creating a hard plastic coating that cannot be melted
- Mixing and application requires:
  - Proper ventilation
  - Respiratory protection
- Common Uses (Interior and Exterior):
  - Durable protective floor coatings to prevent corrosion
  - Concrete repair
  - Water resistance
  - Also for manufacturing of lightweight, high strength parts

**Occupational Health Hazards**

- Asthma
- Allergic and Irritant Contact Dermatitis
- Eye irritation
- Chronic rhinitis (upper airway irritation)
- Cancers (depending on the hardening agent used)
  - Nasal cancers
  - Lung
  - Hematopoietic cancers (e.g leukemia)
- Cancer latency period depends on organ system---anywhere from 5-30 years
  - Intensity, duration of exposure
  - Presence of health related co-morbidities

# Case Example #3: Occupational Disease—Non Hodgkins Lymphoma

# Case: 31 year old man with non-Hodgkins Lymphoma

**Symptoms**

- Shortness of breath beginning ~ end of 2020
- Dry cough
- Chest pain
- Limited exercise tolerance
- **Diagnosed in January 2021!!!**

**Occupation: Landscaper (2016-2020)**

Exposure Duration: 40 hours per week

Job functions:

- Maintenance of grass and flower beds
- **Weed management and prevention (requires pesticide use)**
- Tree cutting and leaf removal

Prior employment in graphic design

**Pertinent Negative History**

- Never smoker
- No family history of cancer
- Negative for HIV and Hep C
- No history of hobbies associated with chemical exposure (e.g painting, varnishing)

**Exposure Summary**

- Primary exposure: “Round-Up” weed killer
- Applied via spray nozzle from canister on his back
- ~40 homes treated per day with each treatment lasting 6-7 minutes.
- No PPE worn (gloves or respirator)
- Contamination of hands frequent

# Clinical Course

## Hospital Course

**Hospitalized for 1 week for his presenting symptoms**

**Chest mass found on CT in December 2020**

**Biopsy showed stage II mediastinal B-cell lymphoma**

**Completed six cycles of chemotherapy**

**Initial course complicated by atrial thrombosis which was treated and resolved**

**Post treatment surveillance involved follow-up with oncology every 3 months.**

**Patient was in remission as of date of last assessment and is working a different job!!**

## Diagnostic Testing

**January 2021 Chest CT Angio:**

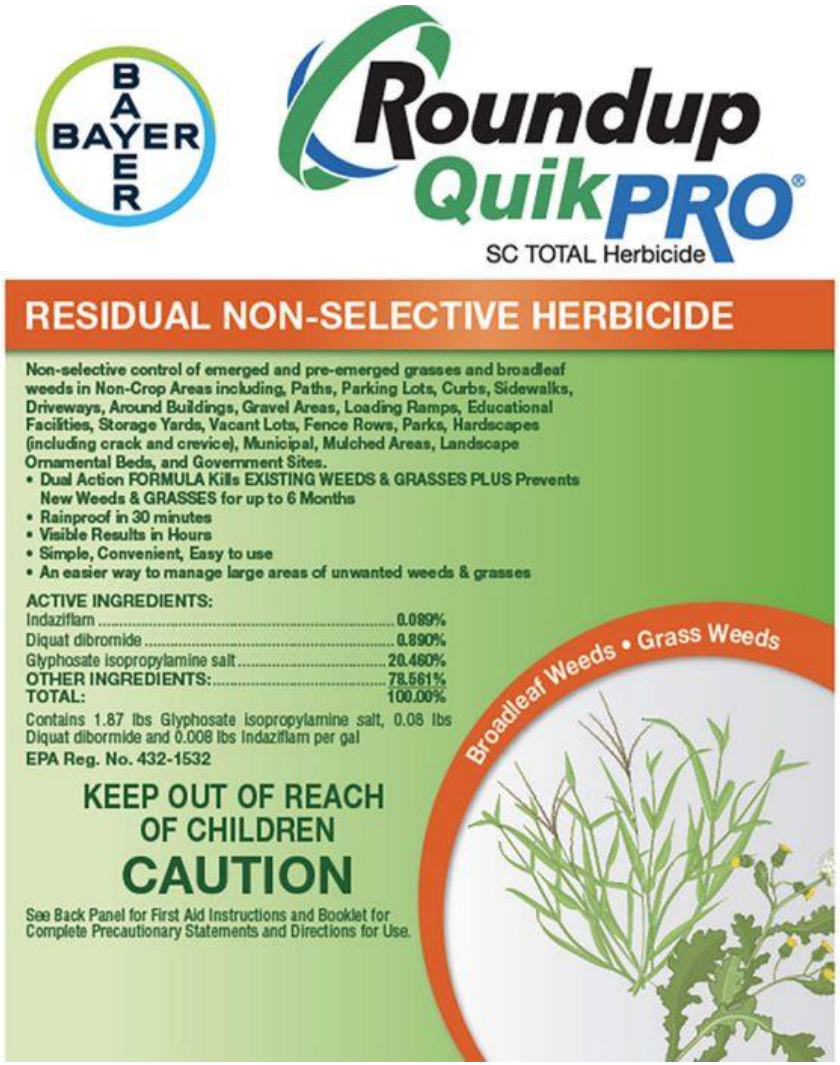
*IMPRESSION: There is a large mediastinal mass that extends from the anterior mediastinum where it measures 11 cm extends into the pre-vascular region with multiple lymph nodes seen within the pre-tracheal and AP window region. The mass extends along the right heart border with portions that appear necrotic. There is a trace pericardial effusion. These findings are highly concerning for malignancy and further workup is highly There is a 3 mm right middle lobe nodule There is a large right-sided pleural effusion with associated consolidation*

**January 2021 PET/CT**

*Bulky neoplastic lymphadenopathy noted in the anterior mediastinum and the aorticopulmonary window is mildly FDG avid, SUV max 3.3.*
*Additional lymph nodes in the pre-tracheal region and in the subcarinal region do not accumulate isotope, and therefore may be inflammatory.*
*Diffuse increase in osseous hypermetabolism, raising the possibility of bone marrow stimulation secondary to drug therapy*

# Sample Herbicide Applicators


# “Round Up” Herbicide Active Ingredient: Glyphosate




**Glyphosate**

- **Widely used as pesticide since 1970’s**
- **Controversial—has been the subject of many US Environmental Protection Agency (EPA) evaluations.**
  - **February 2020 interim report stated no association with cancer when used correctly**
  - **Differs from the International Agency for Research on Cancer which classified as “probable carcinogen” (2A)**
- **Numerous population based cohort studies show an association between pesticide use and leukemia and lymphomas in particular.**
- **Label advises use of proper personal protective equipment (PPE) as specified.**
- **PPE often includes respirators which need to be fitted and maintained**

# Considerations for physicians and other health care providers

# Supporting Workplace Accommodations

- Ask your patients what they do for work and to describe their most common work tasks
- Discuss with patients what they believe may be reasonable work restrictions while remaining cognizant of potential consequences (i.e. protection of job benefits)
- State that your patient has a limitation related to a medical condition for which they need an accommodation.
- Identify specific limitation and expected duration of accommodation (e.g until physical therapy or other specified treatment is completed)
  - Weight lifting restrictions
  - Adjustment of schedule to attend appointments
- Avoid identifying limitations that are vague or overly broad. (don't write "no physical activity")

# Take Home Points

- Occupational history (current and previous) is a part of person's medical history
- Work characteristics may negatively impact a person's health both in the short term AND long term
- Identification of high risk environmental and occupational exposures is important to reducing the risk of chronic diseases, cancers and excess disability

# Questions?

## Contact Information:

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*Selikoff Centers for Occupational Health*

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# Who We Are:
# The Selikoff Centers for Occupational Health

**Our mission at Selikoff is to keep workers healthy and workplaces safe.**

- **We offer:**
  - no-cost, confidential medical care for work-related injuries and illnesses, including diagnosis and treatment, regardless of insurance or documentation status
  - support accessing services and benefits, including New York State Worker's Compensation
  - community outreach and provider education through partnerships with Mount Sinai colleagues, unions, community-based organizations, and worker centers

- Providers can refer to us any patient who presents with work-related injury or illness. We have no financial or insurance parameters for our patients.

- Our intake process takes 5-10 minutes and can be conducted in any language. Appointments are scheduled immediately following intake

For a patient intake appointment:
email occmed@mountsinai.org or
call 212-241-1554

www.mountsinai.org/selikoff

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