

Billerud Paper Mill Blastomycosis Outbreak

A View from the Local Health Department



Dr. Robert Yin, MD, MS, FACG, Medical Director – Public Health Delta & Menominee Counties

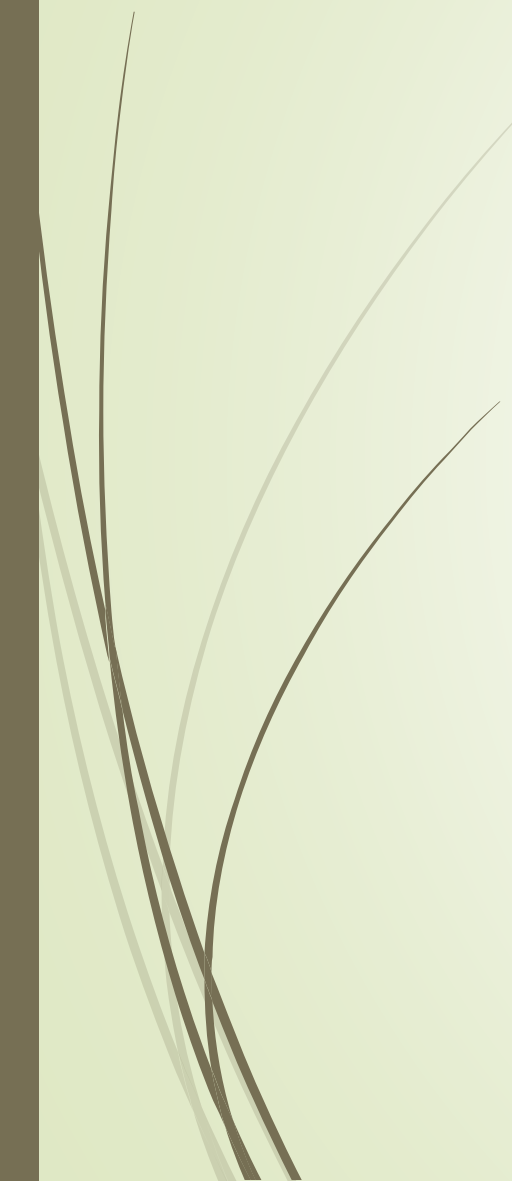
Michael Snyder RS, MPA, Health Officer – Public Health Delta & Menominee Counties

Delta and Menominee Counties





Escanaba Billerud Paper Mill

- Encompasses 2200 acres
 - Has a hydroelectric dam for electricity production.
 - Produces enough electricity to power a city of 100,000 residents
 - Wastewater treatment plant large enough to serve a city of 100,000 residents
 - Largest employer in Delta County, 850 employees
 - Additional contractors work at the mill
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Escanaba Billerud Paper Mill



Escanaba Billerud Paper Mill

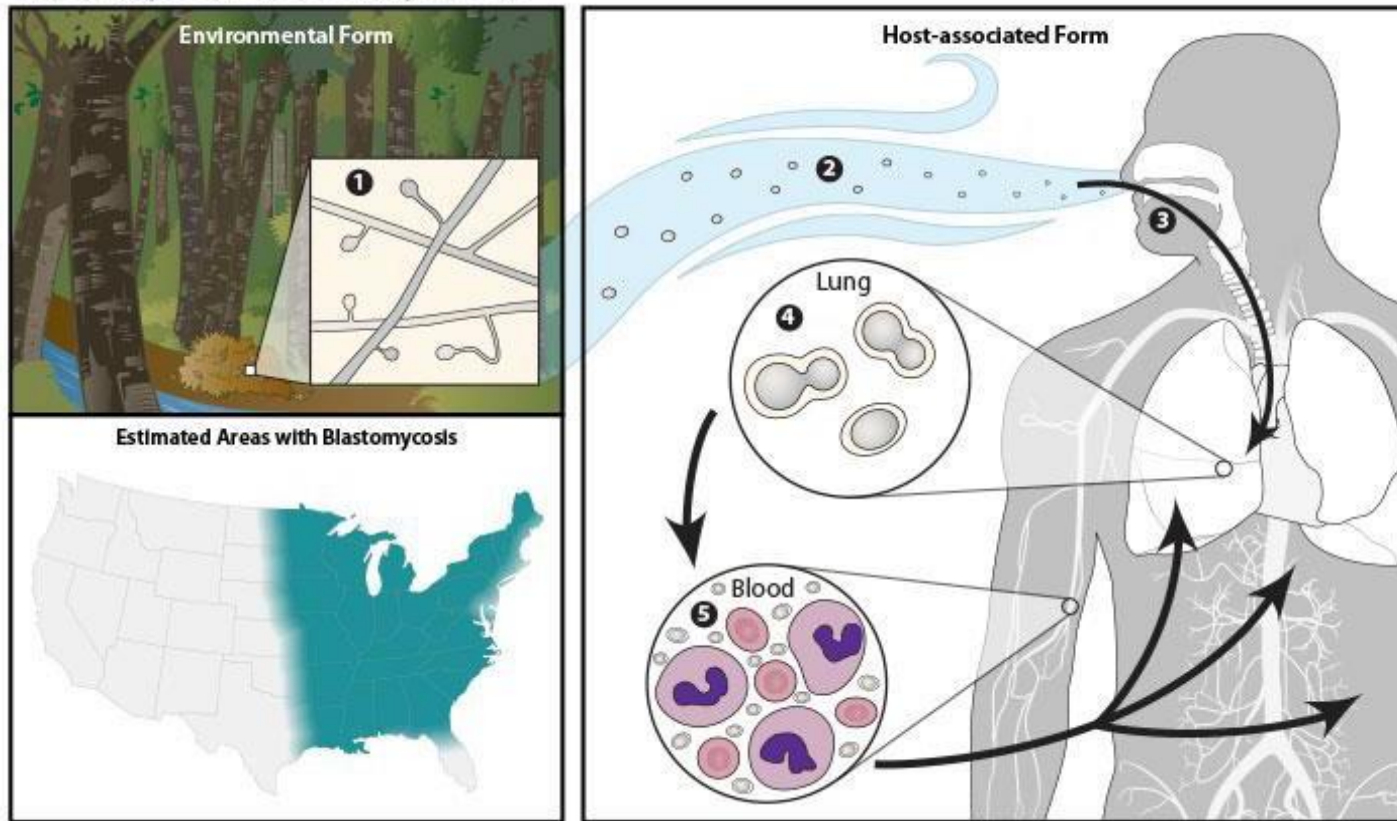


Escanaba Billerud Paper Mill



Anyone can get blastomycosis after breathing in microscopic *Blastomyces* spores from the air

Biology of Blastomycosis



Typically, people who participate in activities that disturb soil or decaying plant matter may be more likely to get blastomycosis

- People can breathe in *Blastomyces* fungal spores when doing activities that disturb soil, plant matter, or dust in these areas:
 - Digging, excavation
 - Disturbing or moving plant debris
 - Forestry
 - Hunting
 - Camping
- It is possible that people can breathe in fungal spores indoors



Blastomycosis is not spread between people or between people and animals



The symptoms of blastomycosis are often similar to the symptoms of other lung infections

- Respiratory symptoms
 - Cough
 - Difficulty breathing
 - Chest, back, or rib pain

- Systemic symptoms
 - Extreme fatigue (tiredness)
 - Fever
 - Night sweats
 - Muscle aches or joint pain
 - Weight loss

- Extrapulmonary symptoms (less common)
 - Can spread to other parts of body: skin, bones/joints, central nervous system, genitourinary system, endocrine system, etc.

- Not all people who are infected will show symptoms



Symptoms do not appear immediately after breathing in *Blastomyces* fungal spores

- Symptoms usually appear between 3 weeks and 3 months after a person breathes in fungal spores, though they may appear sooner





Blastomycosis can be more severe in people with weakened immune systems

- Risk factors for severe disease, hospitalization, and death:
 - Diabetes
 - Chronic obstructive pulmonary disease (COPD)
 - Obesity
 - Cancer
 - Solid organ or stem-cell transplant
 - Autoimmune inflammatory disease (e.g., arthritis)
 - Advanced HIV/AIDS
 - Pregnancy
 - Taking immune-suppressing treatments (e.g., corticosteroids, chemotherapy)

Healthy people can also get
blastomycosis



Canine Blastomycosis

- Dogs can contract Blastomycosis
- Veterinarian Survey

Blastomycosis is treated with antifungals

- Most people with blastomycosis will need treatment with prescription antifungal medication
- It is critical to take the full course of antifungals as prescribed by your healthcare provider
- Antibiotics do not work

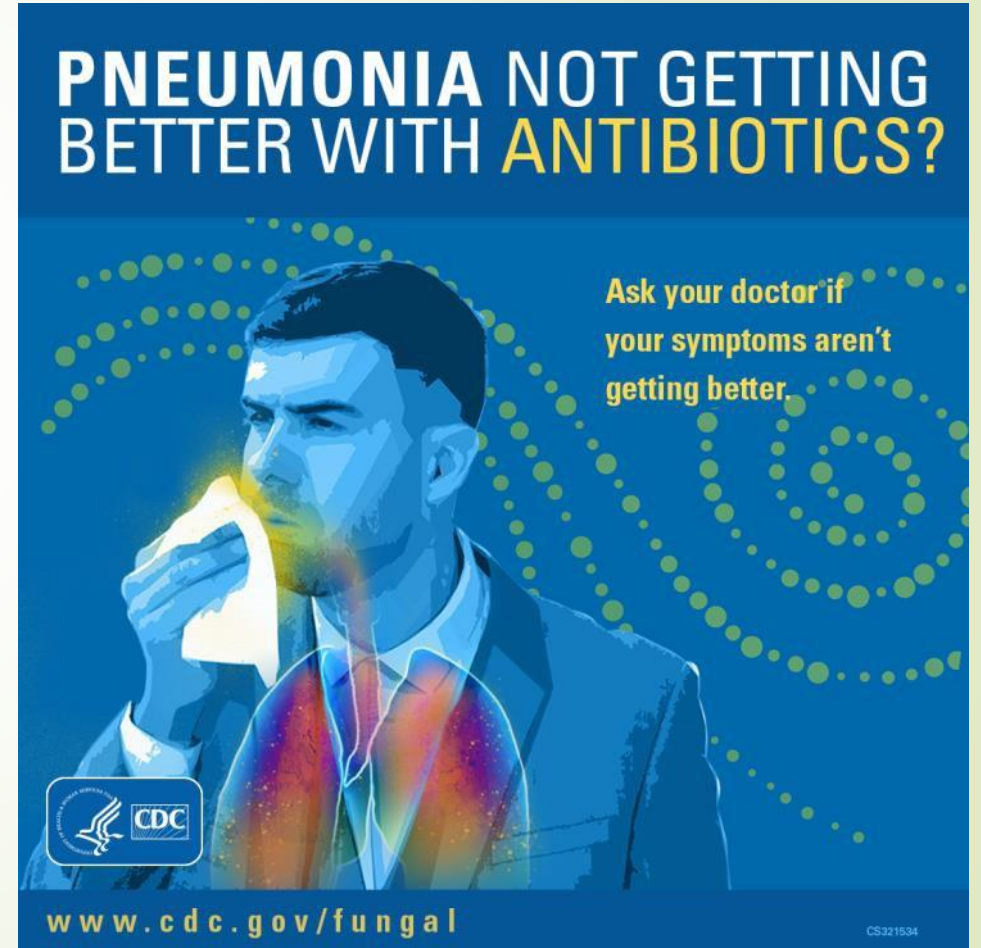


How to reduce the risk of getting blastomycosis

- *Blastomyces* can be common in the environment and therefore avoiding exposure can be challenging
- Avoid activities that disrupt soil or plant matter in areas where the fungus is present, especially for people with weakened immune systems
- Consider wearing personal protective equipment such as an NIOSH-approved N95 respirator, especially when doing activities that may disrupt soil or create dust
- There is no vaccine to prevent blastomycosis

Early diagnosis and treatment can help prevent severe disease

- Employees to seek healthcare if experiencing respiratory symptoms
- Employees told to inform healthcare provider of possible *Blastomyces* exposure





February 28, 2023

- ▶ Public Health Delta & Menominee Counties was contacted by OSF Hospital Infectious Disease Nurse
 - ▶ 3 atypical pneumonia cases not responsive to treatment with 2 antibiotics
 - ▶ Previously healthy, middle-aged males
 - ▶ All employed at Billerud Paper Mill
 - ▶ Two of the cases were related to each other
 - ▶ All cases were being tested for Blastomycosis
 - ▶ PHDM directed OSF to look back to see how many other atypical pneumonia cases had been diagnosed and if they were employed at the paper mill

Timeline of Events

- ▶ **February 28, 2023-** First three cases of atypical Pneumonia reported to Public Health Delta & Menominee Counties
- ▶ **March 2, 2023-** First Confirmed case of Blastomycosis reported to PHDM
- ▶ **March 3, 2023-** Second confirmed case
- ▶ **March 3, 2023-** Billerud Paper Mill notified of employee cases of Blastomycosis
- ▶ **March 3, 2023-** Initial virtual meeting with MDHHS
- ▶ **March 6, 2023-** Michigan Health Alert Network (MiHAN) and blast fax sent out from PHDM to area providers and local health departments informing of the cluster of Blastomycosis in paper mill workers
- ▶ **March 7, 2023-** MDHHS recommends bringing in National Institute for Occupational Safety and Health (NIOSH) for Health Hazard Evaluation (HHE)
- ▶ **March 7, 2023-** First media inquiry from local television station
- ▶ **March 9, 2023-** Fifteen cases identified in mill employees
- ▶ **March 10, 2023-** Verbal acknowledgement from Billerud to proceed with a HHE conducted by NIOSH
- ▶ **March 16, 2023-** Billerud submits a formal application to NIOSH for a HHE
- ▶ **March 27 & 28, 2023-** First HHE visit conducted by NIOSH
 - ▶ PHDM, MDHHS, CDC also present during the HHE



Health Hazard Evaluation

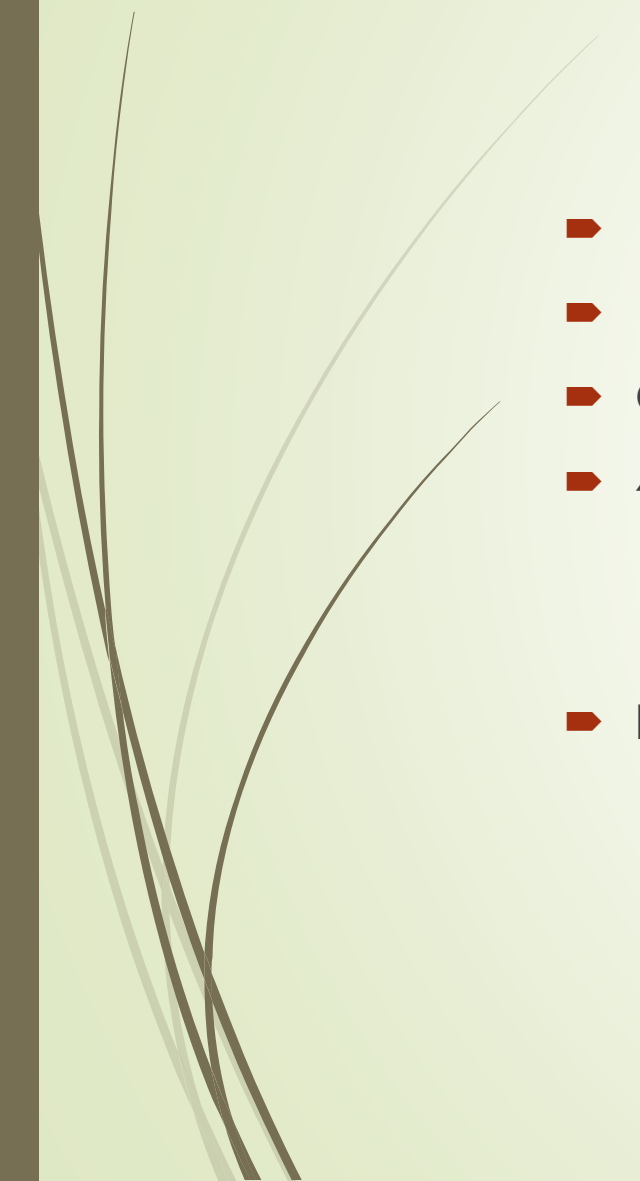
- ▶ Conducted by NIOSH
- ▶ Evaluations requested by 3+ employees, unions, employer or the local health department
- ▶ Helps NIOSH learn about the plant processes
- ▶ Helps employees, unions, and employers learn whether health hazards are present at their workplace and recommends ways to reduce hazards and prevent work-related illness
- ▶ Non-regulatory evaluations
- ▶ Evaluations are done at no cost to the employees, unions, or employers
- ▶ NIOSH issues periodic interim reports to all stakeholders summarizing evaluations and recommendations
 - ▶ Interim reports are posted at the workplace
 - ▶ Interim reports have been issued on April 7, June 7, July 10 and July 28

Timeline of Events

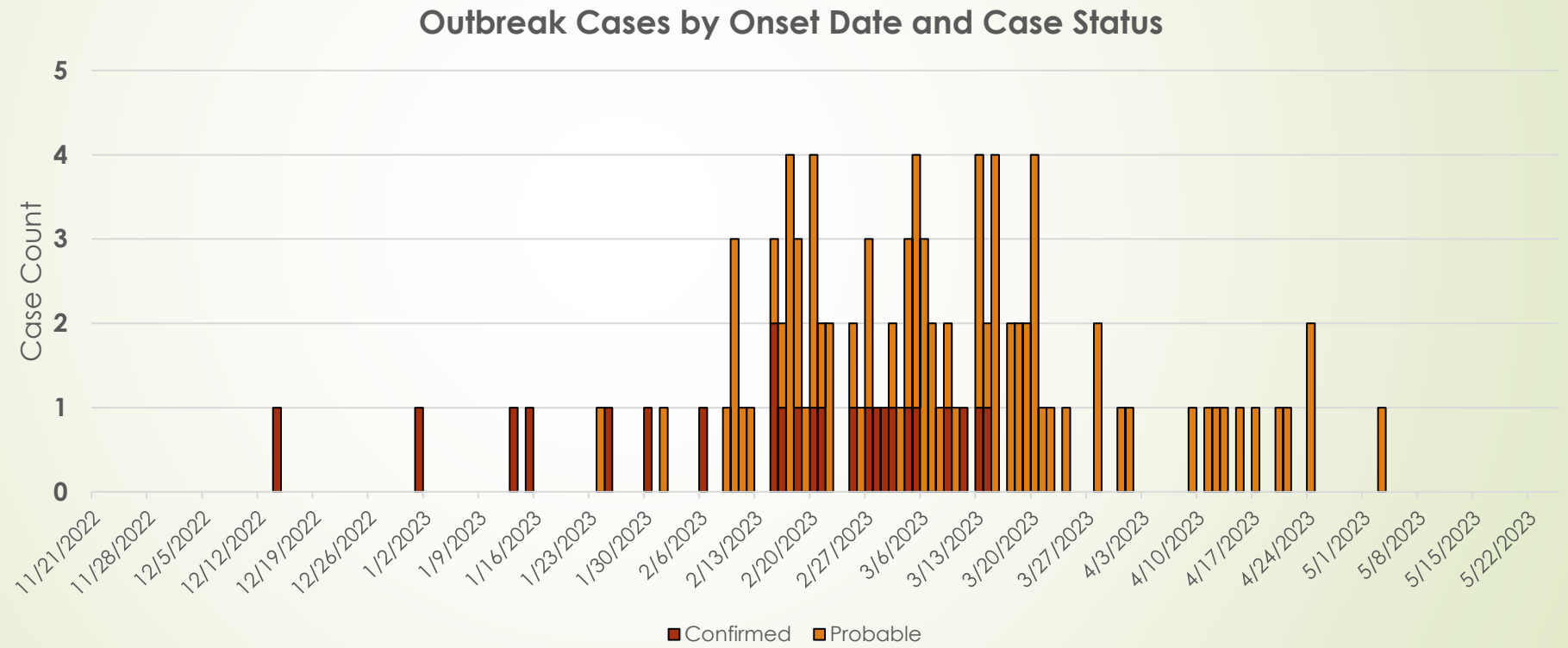
- ▶ **March 31, 2023-** Eighty-one cases identified
- ▶ **April 3, 2023-** Correspondence to area healthcare providers sent from PHDM urging the continuance to consider Blastomycosis in any individual in the community with atypical pneumonia
- ▶ **April 11, 2023-** First death reported as a result of Blastomycosis in a contractor from the mill
- ▶ **April 13, 2023-** Billerud Paper Mill announces the mill will be idling for up to three weeks for a deep cleaning (including duct work) by 120 outside contractors from multiple states in addition to a limited number of mill employees
- ▶ **April 20 - 29, 2023-** Second HHE site visit
 - ▶ Two days of ten townhall type meetings between employees and NIOSH, CDC, MDHHS and PHDM
 - ▶ NIOSH performed employee questionnaires and urine screening.
 - ▶ CDC Mycology collecting environmental samples
- ▶ **May 3, 2023-** Last self-reported date of illness onset associated with the outbreak
- ▶ **May 8, 2023-** Mill re-opens
- ▶ **May 19, 2023-** 118 cases identified
- ▶ Regular virtual meetings involving NIOSH, CDC Mycology, MDHHS, PHDM, and academia
 - ▶ Began as twice weekly
 - ▶ Changed to less frequent meetings due to decrease in case numbers



Outbreak Summary

- 121 total cases – Largest Blastomycosis outbreak in U.S. history
 - 14 hospitalizations
 - One death
 - 477 environmental samples collected by CDC/NIOSH
 - Environmental Samples analyzed by University of Wisconsin
 - No Blastomyces detected
 - Investigation is ongoing
- 

Epidemiologic Curve



Clinical Symptoms

	<u>Confirmed</u>	<u>Probable</u>	<u>Total</u>	<u>%</u>
Hospitalized	8	6	14	12.1%
Fever	17	38	55	51.4%
Cough	27	85	112	94.9%
Difficulty breathing	18	52	70	64.2%
Chest pain	21	55	76	69.1%
Body aches (myalgia)	19	69	88	78.6%
Fatigue	24	71	95	84.8%
Night sweats	18	60	78	70.3%
Dyspnea	20	62	82	72.6%
Pneumonia	17	31	48	47.1%
Hemoptysis	5	5	10	9.4%
Weight loss	11	14	25	24.8%



Lessons Learned

1. Very important to establish a relationship with the employer up front
2. Get the paper mill on board with requesting the HHE
3. Be prepared for the media
4. NIOSH is there to help (No enforcement)
5. NIOSH does things on their own time
6. Be prepared to deal with uncertainty



Questions?

Michael Snyder, Health Officer, Public Health Delta & Menominee Counties
Dr. Robert Yin, Medical Director, Public Health Delta & Menominee Counties