



**International Telecommunications
Safety Conference - 2003**

Mold Issues
Technical, Legal & Regulatory

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Purpose:

- Provide basic technical awareness
 - "Mold 101"
- Identify key issues (Legal and Insurance)
- Introduce hazard assessment criteria
 - Photos
- Overview of mold remediation guidelines
- Summarize actions for mold prevention
- Discussion

What is Mold?

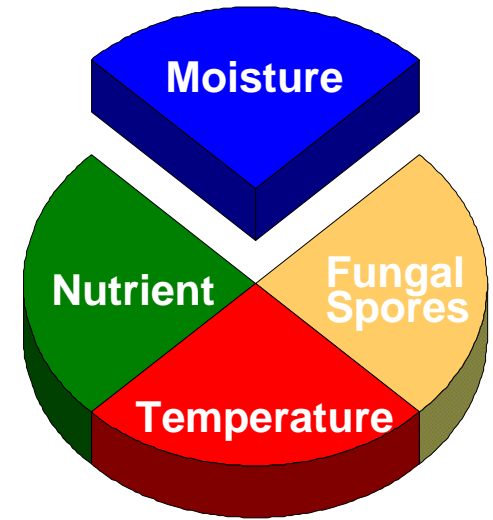
- Small plant-like living organisms
- Saprophytes (use organic matter as food)
- Many species
- Each has specific needs for growth
 - Moisture, temperature, nutrients, light/dark
- Mold reproduce by microscopic spores that germinate when conditions are correct
- Produce metabolic by-products. Some are more toxic

Where is Mold Found?

- Everywhere, except in sterile environments
 - Homes, office buildings, ambient environment (soil, water and air), food, clothing, surfaces, on skin, and etc.

What Conditions Favor Mold Growth?

- *Moisture*
- Cool, moderate temperatures
- Subdued light
- Food source - organic matter
 - Cellulose, textiles, food particles, dander
- A surface to provide an anchorage point
- Low air movement



Why is Mold a Concern?

- Musty / foul odors
- Individual sensitivity to spores or mold fragments
 - Can be severe for some individuals
- Can spread if not controlled
- Exposure to mycotoxins from certain molds may cause symptoms or illness
 - Primary route entry is by ingestion
 - Can be inhaled if large source is disturbed
 - Not likely except in extreme situations
- Emotional concerns: perception-fear-media focus

“Mold is the Asbestos of the 21st Century”

(10,000 mold cases currently pending)

“Mold is Gold”

(For plaintiffs and attorneys: \$Billions pending for lawsuits)

Beware of “The Fungus that Ate Sacramento”

Forbes, January 21, 2002

(Exaggeration, misinformation & media hype is pervasive)

“Toxic Mold”

(A media-coined term not a scientific definition)

“Texas: The Ground Zero of Mold”

(Sharp increase in suits/insurance claims and much research)

The number of cases is growing nearly exponentially
(trend is for 5-10X annual increase in claims and lawsuits nationally)

Insurance industry is severely impacted
(Massive number of mold-related claims - monumental losses)

Exclusions and limitations being written into policies
(Texas initially impacted - Now a national trend for both residential and commercial policies- 35 States now allow limitations)

High profile cases add to publicity and momentum

Erin Brockovich - \$1M+ suit against seller and builder of her new home

Ed McMahon - \$20M+ suit for his serious illness and death of his dog

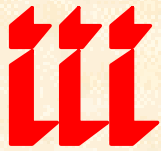
“Rocker Ted Nugent Driven Out of Home by Mold - Wife experiences health problems” Assoc. Press - 7/5/2003

Legal & Insurance Issues

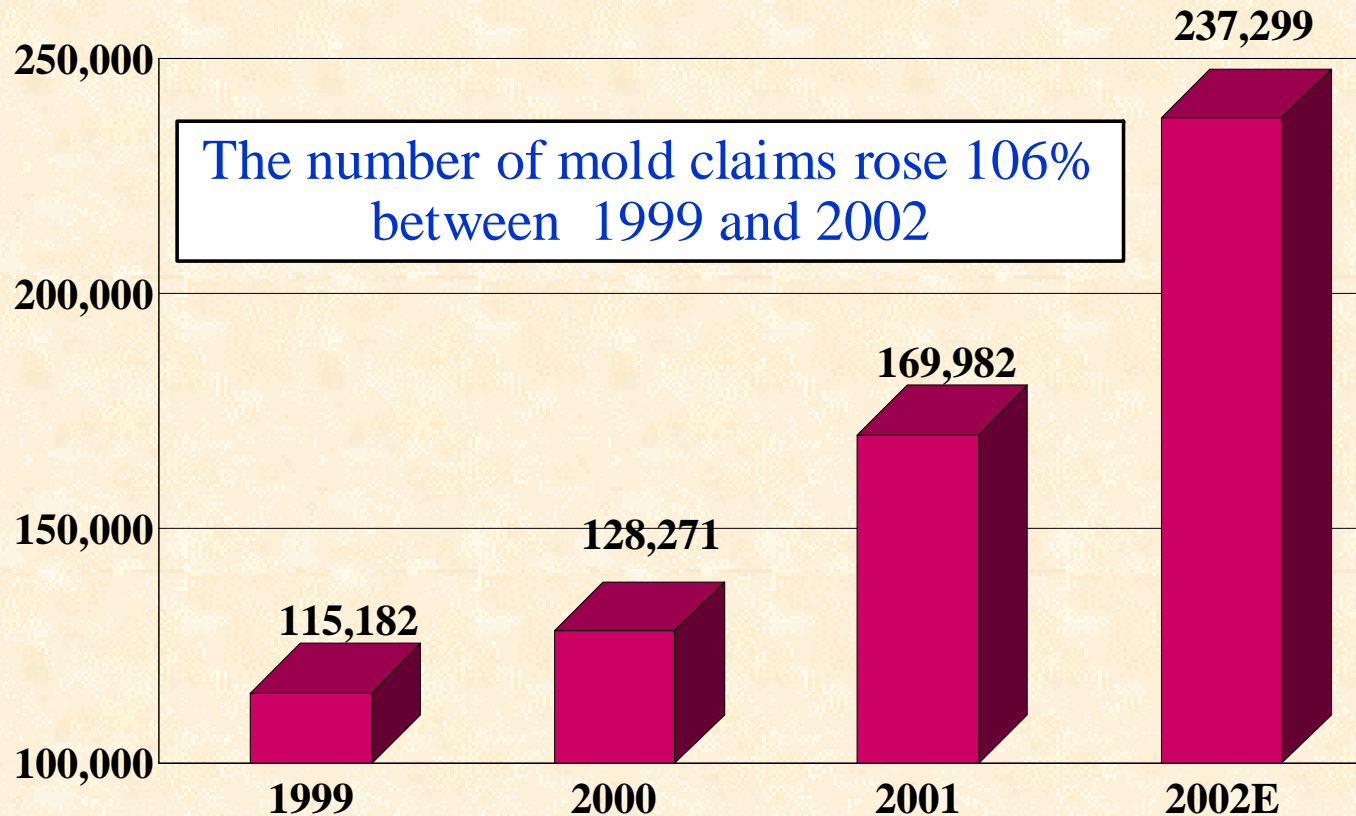
- ◆ **Case history is expanding**
 - Large settlements
 - Technical issues are confusing
 - Effects of exposure difficult to prove or disprove - science is improving
 - Responsibility for mold growth can be difficult to identify

Legal & Insurance Issues cont'd

- ◆ **Insurance companies limiting payments**
 - Policy limitations and exclusions
 - Umbrella policies necessary to cover potential costs of major incidents
 - Risk Managers would like to see:
 - ☞ Water intrusion and moisture control programs
 - ☞ Corporate policy for mold and moisture control
 - ☞ Awareness training



*Texas: Estimated Total Number of Mold Claims, 1999-2002E**

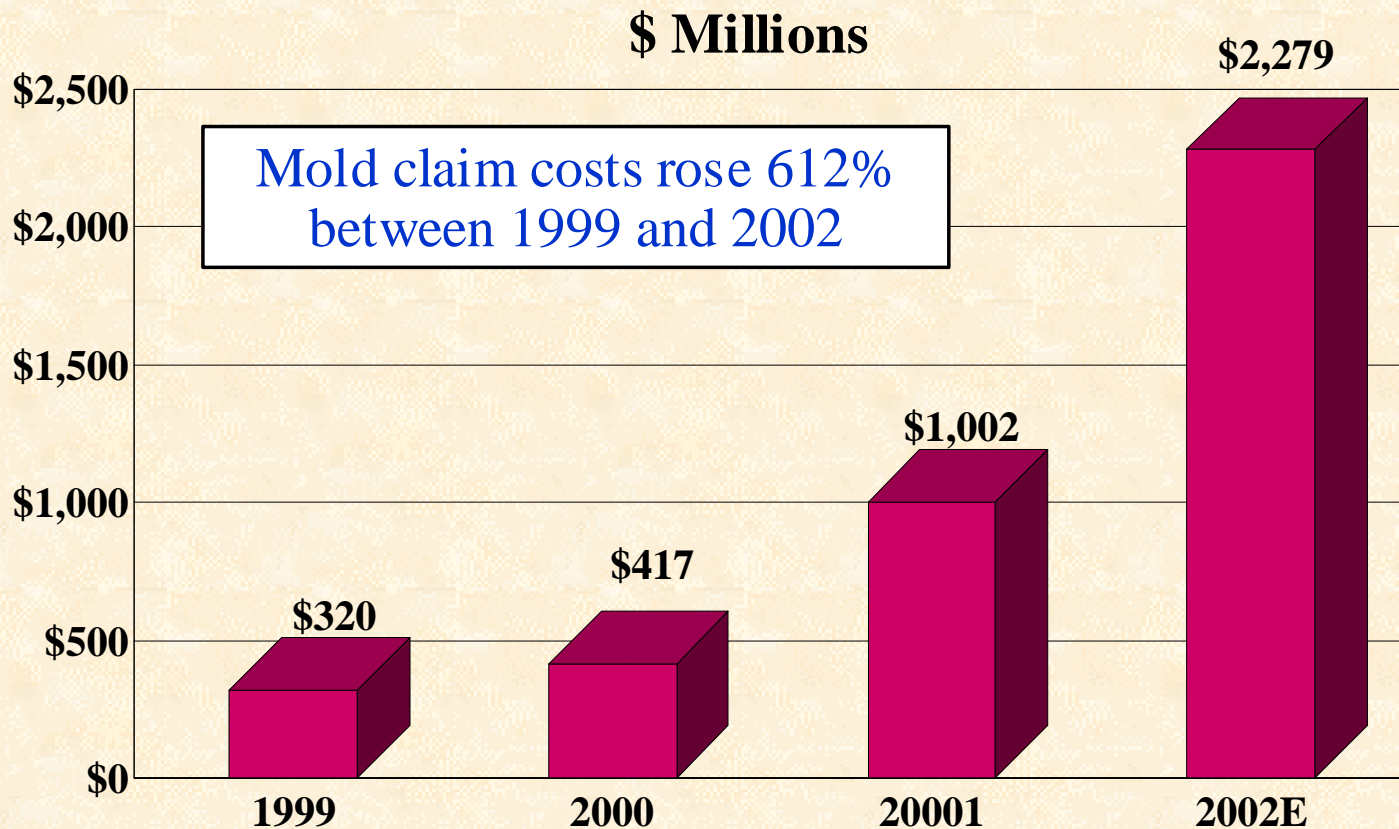


Source: Texas Department of Insurance;

*2002 III estimate is annualized figure based on data through September 2002.



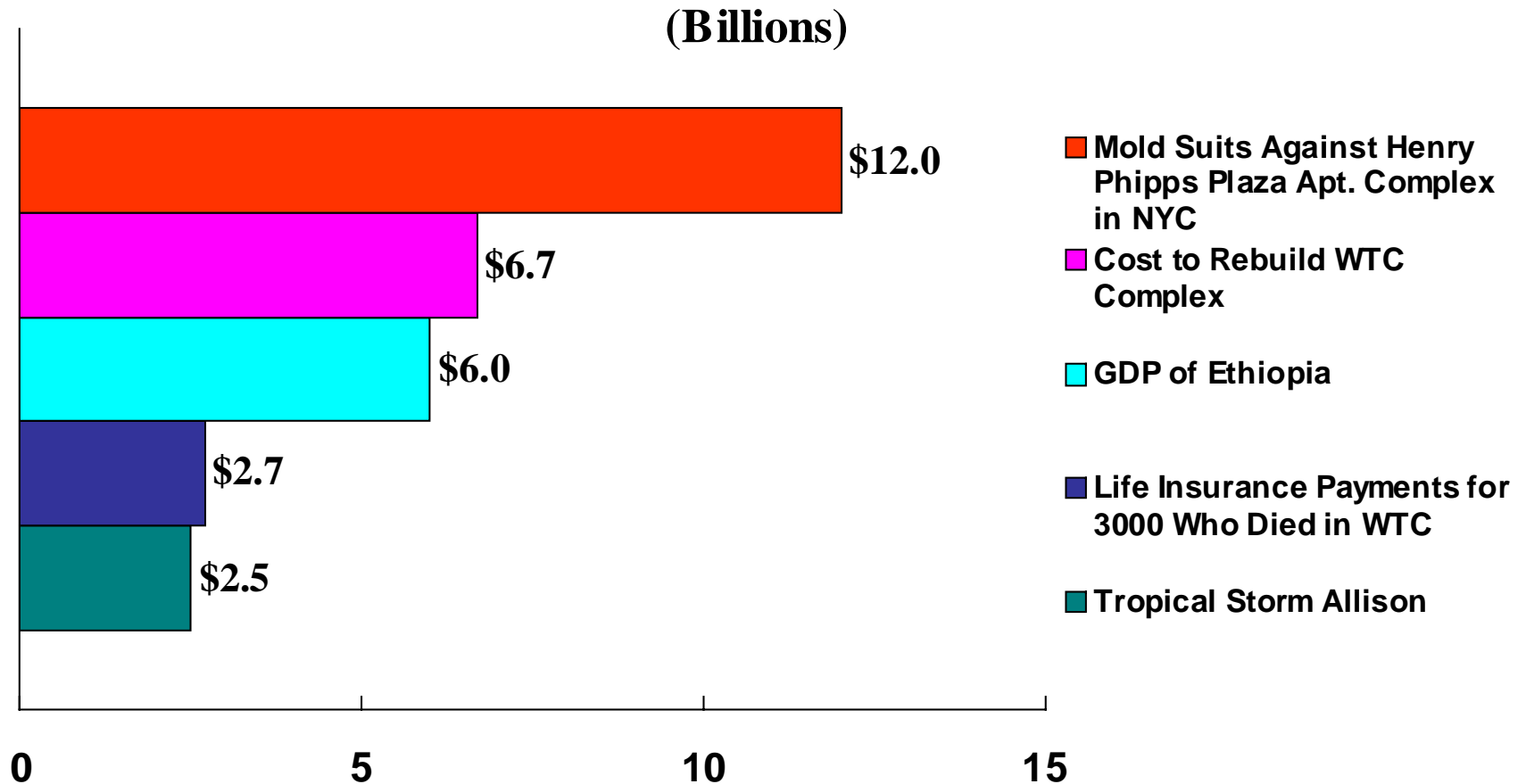
*TX: Annual Losses from Mold Claims**



Source: Texas Department of Insurance;

*2002 III estimate is annualized figure based on data through September 2002.

Mold Plaintiffs Want More than Rebuilding Cost of WTC!



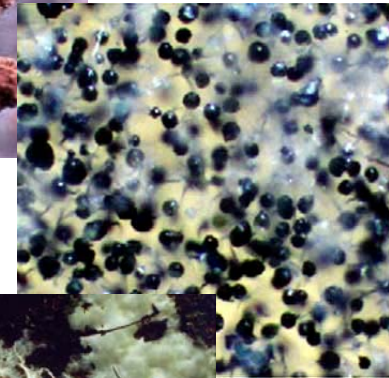
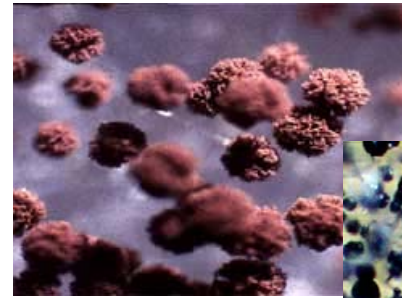
Source: Insurance Information Institute

Symptoms of Mold Exposure

- Mold spores can cause **allergic reactions** in some individuals. Specifically, **respiratory irritation, runny nose, cough, congestion and aggravation of asthma** are common symptoms.
- The term "**toxic mold**" has been associated with species such as **Stachybotrys chartarum**, **Penicillium**, and **Aspergillus** that can produce toxins that cause illness resulting from extreme mold contamination situations. **Stachybotrys** gets the most **press attention**.

Some common types of mold:

- Alternaria
- Aspergillus
- Cladosporium
- Fusarium
- Stachybotrys
- Penicillium
- Trichoderma
- Ulocladium



And many others . . .

Definitions

- **Mold:** Small plant-like organisms that utilize organic matter as food. Favor dark, moist and cool areas to grow. Have woolly, filamentous appearance.
- **Spore:** A microscopic reproductive unit that can be dispersed into the air and will germinate when conditions are right.
- **Culture:** Growth of organisms in a laboratory to study or isolate the type of biological contaminant present. May take a week or so to grow.
- **Amplification:** Increase in the amount of organisms present as compared to what would typically be present. (i.e., A patch of mold growth)

Definitions (continued)

- **Assessment:** Identification of the extent of mold growth in a given area. Visual inspection is usually the most informative initial step
- **Mold Remediation:** Removal of mold growth by methods that avoid dispersion of spores (or mycotoxins) to other areas. Can include use of containment, negative pressure ventilation and personal protective equipment
- **Contamination:** Presence of a biological, physical or chemical agent at a concentration that is significantly above background levels or that can cause a health risk
- **Disinfection:** Destroys harmful organisms using methods such as heat or chemicals

Assessment of Mold Conditions

- Visual observation using a flashlight is an effective first step.
- Air sampling has limited value for initial assessment.
 - Spores may not be airborne.
 - Will not locate the source.
 - No definitive standards exist. Comparison is made with outside air.
 - Requires time (1 week +) for cultures to grow.
- Surface samples likely to reveal presence of “normally occurring” molds. Significance is difficult to interpret.

What to Look For and Where:

- Inspect every “nook and cranny”.
 - Ceiling, floors and walls
 - Outside walls, crawl spaces, window frames, basement walls
 - Dark locations with elevated humidity or condensation
 - Air handling units and duct work
 - Look for evidence of water damage, moisture and staining
 - Past and present water leaks or seepage
 - Rust and calcification is often confused with mold
 - Any musty / foul odors present?

What to Look For and Where: (continued)

- Blotches of fuzzy areas and dark staining are likely areas of contamination. However, some mold is light in appearance, some is darker. Can be white, pink, green, brown, gray or black.
- Staining may indicate past growth.
- Some growth may be hidden behind walls or structure.
- Mold can grow on the backing of some carpets
 - Past water condition or large spill
 - Condensation - carpeting directly on a concrete slab
- Estimate the extent of the growth in square feet.
- Write-down your observations. Take photos.

Mold Photos

September 2003



Actions When Mold is Found:

- Initial assessment
 - Extent of contamination
 - Number of square feet
 - How likely is the mold to become airborne?
- What type of clean-up is appropriate?
 - Small area: Basic housekeeping and disinfection
 - Larger areas may need special procedures for removal and disinfection
 - Extensive remediation due to gross contamination needs careful planning and management

Standards and Guidelines:

Federal Regulations

Hearings being held

Mold legislation being introduced

No final standards or guidelines

Many States Have Pending Legislation

Arizona

California

Connecticut

Florida

Illinois

Indiana

Louisiana

Maryland

Massachusetts

Michigan

Montana

Nevada

New Jersey

New York

Oklahoma

Oregon

Pennsylvania

Rhode Island

Texas

Source: www.moldupdate.com 2001 to 2003 state legislation updates

Mold Guidelines

- Federal Gov't

- EPA: Allergens, IAQ, Building-Related illnesses
- CDC: Disease transmission, illnesses and prevention
- FEMA: Floods and Weather-related catastrophies

- Academia

- University of Minnesota, Department of Environmental Health & Safety
- University of Wisconsin-Extension, The Disaster Network

- Professional Associations

- AIHA, ACGIH, ASHRAE, American Lung Association; National Institute of Allergy and Infectious Diseases; American Academy of Allergy, Asthma & Immunology

- Industry and Manufacturing Groups

- Carpet and Rug Institute, Energy and Environmental Building Association, National Air Duct Cleaners Association (NADCA)

Mold Guidelines cont'd

- NYC Dept of Health and Mental Hygiene, Bureau of Environmental & Occupational Disease Epidemiology
“Guidelines on Assessment and Remediation of Fungi in Indoor Environments” April 2000
- U.S. EPA, Office of Air and Radiation, Indoor Environments Division
“Mold Remediation in Schools and Commercial Buildings”
EPA 402-K-01-001, March 2001
- ACGIH - Bioaerosols Evaluation and Control (1999)
- AIHA - Report of Microbial Growth Task force (2001)

Professional Assessment and Remediation:

- Areas larger than 10 square feet should be professionally evaluated.
- Mold growth involving HVAC systems should be professionally evaluated.
- Special cases involving medical cases or numerous employee complaints may need professional assessment.

Clean-up Categories (NYC Criteria):

Small isolated area

- 10 sq ft or less

Mid-Sized isolated areas

- 10 - 30 sq ft

Large isolated areas

- 30 - 100 sq ft

Extensive contamination

- Greater than 100 sq ft

Clean-up:

Small isolated area

- NYC criteria is 10 sq ft or less
- Basic housekeeping can be used for areas of several square feet of isolated growth
 - Local decision
 - "Grandma Techniques"
 - Rubber gloves
 - Detergent, sponge, rinse with water
 - Use mild disinfectant.

Clean-up: (continued)

- Areas larger than 10 sq ft, or areas involving HVAC systems, may require special procedures for removal and disinfection
 - Containment
 - Isolation of HVAC system
 - Negative air / HEPA filters
 - Respiratory Protection
 - Protective suits

Mold Prevention

- Control **moisture** migration and **condensation**
 - Hot /cold cycles can exacerbate condensation
- Repair **water** leaks
- Avoid constant high **humidity** conditions
- Remove standing water **ASAP** after flood
- Provide air flow to reduce mold growth
- **Store** essential **paper records above grade**, not in basements
- **Control mold growth early-on** before growth spreads
- Remove water-soaked materials if they cannot be **quickly dried**
- Inspect mold-prone areas routinely

Mold Sampling Issues

- The type of mold present does not determine the clean-up method.
- Sampling can delay action - Cultures take a week or more to grow.
- Spores may not be airborne. Extent of contamination may be underestimated.



Mold Sampling Issues (continued)

- Mold is found in most environments.
- Air sampling will not locate the source nor give a thorough/accurate assessment of the extent of contamination
- Occupants expect sampling - Is it safe?
 - Perceptions
- Sampling data can be useful in court or to document effective remediation



Mold Sampling Issues (continued)

Should sampling or air monitoring should be done?

– The New York DOH Guidelines state:

“Bulk or surface sampling is not required to undertake a remediation.”

“Air sampling for fungi should not be part of a routine assessment.....decisions about appropriate remediation strategies can usually be made on the basis of visual inspection.”



Discussion and Questions



Mold References

- [www.atsdr.cdc.gov/atsdrpublications/atsdrmonographs/monograph1.pdf](#)
- [www.atsdr.cdc.gov/atsdrpublications/atsdrmonographs/monograph1.pdf](#)
 - [www.atsdr.cdc.gov/atsdrpublications/atsdrmonographs/monograph1.pdf](#)
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