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Environmental Issues Related To Property Development or Redevelopment

How to Proactively Manage Risks and Reduce Liability

What We Will Cover…

- Introduction
  - Building and site development-related issues
  - Due Diligence and liability
  - Governing environmental regulations

- Environmental Due Diligence
  - Brief history
  - Identifying potential environmental issues
  - Mitigating environmental concerns

What We Will Cover…

- OSHA Regulations and Construction
  - OSHA's Mission
  - Hazcom
  - HAZWOPER
  - Building-related issues covered by OSHA & EPA
  - Mold: Not regulated, but standard of care is important

Introduction
Building and site development-related Issues

- A legal concept referring to the quality of doing business
- If similar industries can conduct business and make a profit maintaining that standard, then all industries should be able to maintain that same level of quality

Introduction
Building and site development-related Issues

- Examples: compliance with environmental, safety, waste handling and disposal regulations

Introduction
Due Diligence and Liability

- How is due diligence defined?
  - Investigation within a certain standard of care
  - may be a voluntary action or a legal obligation
  - Due diligence is about reducing present and future risk, liability and damages

Introduction
Due Diligence and Liability

- Today, Environmental Due Diligence (EDD) is an integral part of business transactions involving commercial, industrial and public properties.

- EDD is about reducing risk, liability and damages.

Introduction
Due Diligence and Liability

- Three types of Liability
  - Contractual
  - Tort (negligence)
  - Regulatory

There can be civil and criminal penalties.

Introduction
Due Diligence and Liability

What due diligence issues must building owners address prior to design and development?

Hidden friable asbestos insulation discovered during excavation below pavement.

Introduction
Due Diligence and Liability

- Example of environmental and OSHA Liabilities During Construction:
  - When did you first discover the asbestos?
  - What was your response and why?
  - Were the regulators notified?
  - Was asbestos released into the storm sewers?
  - Did asbestos spread to adjacent properties?
  - Was asbestos released into the air?
  - Was the public exposed?
  - Were workers notified and protected?
  - Was the material handled properly?
  - Was the material disposed of properly?

Introduction
Due Diligence and Liability

- The owner and general contractor (GC) may be fined.
- The owner and GC may be found negligent.
- The project may receive bad press.
- The project may get shut down with delay damages.
- Worker compensation claims may arise.
- Law suits may result.

- Why?
  - Parties did not properly exercise due diligence before or after the regulated

    material was discovered during earth work.

Introduction
Governing Regulations

- Federal Environmental Regulations:
  - Clean Air Act
  - Clean Water Act
  - Resource Conservation Recovery Act
  - CERCLA – Superfund; recognized environmental conditions (RECs); “releases”
- Federal Worker Protection Regulations
  - OSHA

Introduction
Governing Regulations

- Two major bodies of State regulations:
  - Environmental: Oregon DEQ
    Department of Environmental Quality
  - Worker Protection: Oregon OSHA
    OSHA – Occupational Health and Safety Administration (Division)

Environmental Due Diligence
Brief History

Environmental Due Diligence
The act of evaluating the current and historical uses of a property to identify environmental problems, generally completed before a transaction.

Phase I Environmental Site Assessments
The most familiar form of EDD. Phase I ESAs are performed to:

- Support a defense to CERCLA liability for contamination
- Satisfy lender and sometimes buyer/seller requirements
- Understand potential environmental concerns to support sound business decisions

Environmental Due Diligence
Brief History

1980 Comprehensive Environmental Reclamation, Compensation, and Liability Act

- Established prohibitions/requirements for closed and abandoned hazardous waste sites
- Provided liability for releases of hazardous waste at these sites
- Established a trust fund for cleanup when no responsible party could be identified (Superfund)

Environmental Due Diligence
Brief History

CERCLA originally provided for three defenses to liability:

- Act of God
- Act of war
- Acts of a third party

Environmental Due Diligence
Brief History

1986 Superfund Amendments and Reauthorization Act (SARA)

SARA added the Innocent Purchaser Defense:

- No knowledge or reason to know that any hazardous substances were disposed of at the facility

Defendant must demonstrate that it undertook:

- "At the time of acquisition, *all appropriate inquiries* … into the previous ownership and uses of the facility in accordance with generally accepted good commercial and customary standards and practices."

Environmental Due Diligence
Brief History

What Constitutes All Appropriate Inquiry?

1993 American Society for Testing and Materials ("ASTM") published "standard practice" for environmental site assessments-E1527-93.

- It was intended to satisfy the "all appropriate inquiry" requirement to qualify for the Innocent Landowner Defense.

1997 Update
2000 Update

…. And then came

2002 CERCLA Amendments

- Established Ten Criteria for EPA to follow in preparing a rule for All Appropriate Inquiry

- Added two new CERCLA Defenses
  - The Bona Fide Prospective Purchaser
  - Contiguous Property Owner

Environmental Due Diligence
Brief History

Innocent Purchaser

- Buys property without knowing, or having reason to know, of contamination on the property.

Contiguous property owner

- Property owner whose property is not the source of the contamination, but is "contiguous" to a facility that is the source of contamination found on their property

Bona fide prospective purchaser

- Buys property knowing, or having reason to know, of contamination on the property

Environmental Due Diligence
Brief History

"Not later than 2 years after January 11, 2002, the [EPA] shall by regulation establish standards and practices for the purposes of satisfying the requirement to carry out all appropriate inquiries."

Environmental Due Diligence
Brief History

2005 EPA's All Appropriate Inquiry Rule (40 CFR Part 312)

- ASTM revised its Phase I ESA standard in cooperation with EPA's development of the AAI Rule
- AAI Rule states that compliance with 2005 ASTM E 1527 standard satisfies AAI
- Defines "Environmental Professional" (EP)

Environmental Due Diligence
Identifying Potential Environmental Issues

The Phase I ESA is <u>one type of</u> environmental due diligence

Limitations of the Phase I ESA:

- Generally is performed on behalf of the buyer or seller.

  Contractors or other users of the property may not have access to the findings of a Phase I ESA.

- Generally is relegated to the identification of environmental issues outlined in the AAI Rule.

  Other issues that may be equally important may not be included in a typical Phase I ESA scope.

- Unless specifically added to the work scope, a Phase I ESA generally deals with liabilities associated with soil, surface water, groundwater, not necessarily building liabilities.

Environmental Due Diligence
Identifying Potential Environmental Issues

Other environmental issues to consider

- Vapor Intrusion
- Wetlands and protected areas
- Protected flora and fauna
- Stormwater management
- Erosion and dust control
- Spill containment and management
- Environmental permits
- Existing building conditions
- Noise
- Indoor Air Quality
- Asbestos
- Lead
- Radon

Environmental Due Diligence
Identifying Potential Environmental Issues

Federal Websites

Envirofacts: http://www.epa.gov/enviro

Provides a single point of access to select U.S. EPA environmental data

ECHO: http://www.epa-echo.gov/echo

Provides compliance and enforcement information for facilities nationwide

USGS: http://www.usgs.gov

Provides information regarding biology, geology, seismic information, natural resources

USFWS: *www.fws.gov*

Provides information on federally protected species and habitat

Environmental Due Diligence
Identifying Potential Environmental Issues

State Websites

DEQ Facility Profiler: http://deq12.deq.state.or.us/fp20

Provides information on facilities listed in many DEQ databases

OWRD: http://www.wrd.state.or.us

Provides information regarding surface and groundwater use and a searchable water well database

Other Websites

City of Portland: www.portlandmaps.com

Provides information on properties throughout Portland metro area

EDR: http://commonground.edrnet.com/edrstart

An open forum for discussing issues of environmental due diligence. Free membership.

…and many others

Environmental Due Diligence
Identifying Potential Environmental Issues

Beyond the Phase I ESA…Other Transactional Tools

Things to consider when moving forward the transaction, development, or redevelopment of a property

- **Support Team**
  - Environmental attorney
  - Environmental consultant
  - Knowledgeable lender
  - Regulatory agency (s)
- **State Regulatory Policies**
  - Prospective purchaser's agreement

    Tough to get federal PPA
  - Contaminated Aquifer Policy
  - Easements and Equitable Servitude

Beyond the Phase I ESA…Other Transactional Tools

Things to consider when moving forward the transaction, development, or redevelopment of a property

- **Risk Transfer Mechanisms**
  - Buyer/Seller Negotiations
  - Public funding
  - Insurance
    - Pollution Prevention Liability insurance
    - Cleanup Cost Cap insurance

Environmental Due Diligence
Mitigating environmental issues

After the transaction, what next?

- **Funding**
  - Private parties
  - Federal and Local Grant Funding
  - EPA Brownfields Program
- **Regulatory Programs**
  - Oregon DEQ
  - Oregon/Federal OSHA
  - Local Municipalities
- **Remedial and Mitigation Approaches**
  - Chemical, physical, biological remediation
  - Engineering and administrative controls
  - Green remediation technologies

Environmental Due Diligence
Mitigating environmental issues

Brownfield Sites

Vacant or underutilized commercial or industrial property where real or perceived environmental contamination is a significant obstacle to property use and redevelopment.

- **Federal and Local Grant Funding**
  - 1,255 assessment grants totaling $298.6 million
  - 230 revolving loan fund grants totaling $217.7 million
  - 426 cleanup grants totaling $78.7 million
  - Total EPA funding since 1995 has been nearly $600 million
- **EPA Brownfields Program**
  - Awarded $74 million in grants in 2008
  - Current stimulus plan includes an additional $100 million for 2009 grants

Environmental Due Diligence
Mitigating environmental issues

- **State and Local Funding**
  - OECDD
  - City of Portland
  - Clackamas County
  - City of Gresham
  - METRO

Environmental Due Diligence
Mitigating environmental issues

- **State Regulatory Requirements**
  - RI/FS process, culminating in a Record of Decision
  - Review and approval of Remedial Action Plan
  - Oversight during remedy implementation
  - Review and approval of Closure Report
  - Negotiation of Easement and Equitable Servitude
  - Use restrictions
  - Right of entry
  - Recorded in property deed
  - **No Further Action letter issued**

State of Oregon
Department of
Environmental
Quality

Environmental Due Diligence
Mitigating environmental issues

- **Oregon/Federal OSHA Requirements**
  - Does HAZWOPER apply?
  - Should air monitoring be conducted?
  - Should pre- and post-medical monitoring be conducted?
  - Personal protective equipment and engineering controls.

- **Municipal Requirements**
  - Example: City of Portland
    - Has clean fill requirement
    - Requires indemnification against damages resulting from the presence of hazardous substances

Environmental Due Diligence
Mitigating environmental issues

- **Remedial and Mitigation Approaches**
  - Chemical, physical, biological remediation

Soil Vapor Extraction

Electrical Resistive Heating

Environmental Due Diligence
Mitigating environmental issues

- **Remedial and Mitigation Approaches**
  - Engineering and administrative controls

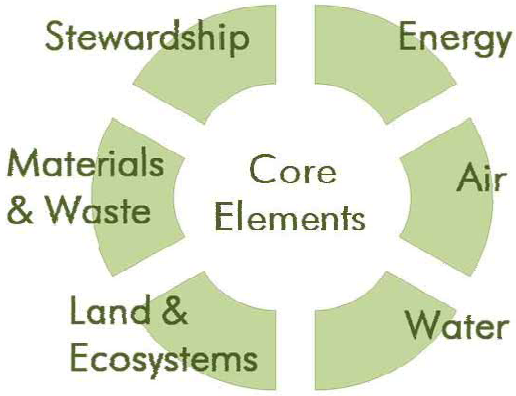
Surface Capping

Building Vapor Venting Systems

Environmental Due Diligence
Mitigating environmental issues

Sustainability and Green Building Techniques
Becoming a priority for developers

Implementation of Green Remediation core elements can further maximize the sustainability of brownfields redevelopment.



OSHA Regulations
OSHA's Mission

Worker Protection: OSHA – Protect all employees impacted by the project

Regarding hazardous materials and wastes:

- OSHA General Duty Clause
- Workers have a right to know
- Hazardous wastes training is required

OSHA Regulations
OSHA's Mission

Regarding hazardous substances and wastes:

- OSHA General Duty Clause
- OSH Act, Section 5 (a) (1)

Employers shall provide a place of employment free from recognized hazards that are likely to cause death or serious injury.

OSHA Regulations
Hazcom

Regarding hazardous substances and wastes:

- Hazcom: Hazard Communications
- 29 CFR 1910.1200
- Workers have a right to know about potential chemical hazards
- Communication is required: Labeling, MSDS, and training

OSHA Regulations
HAZWOPER

Regarding hazardous substances and wastes:

- Hazardous wastes training is required
- HAZWOPER Training
- Hazardous Waste Operations and Emergency Response
- 29 CFR 1910.120
- Includes HASP Requirements (Health and Safety Plan)

OSHA Regulations
HAZWOPER

Who knows what contamination might be buried or spread throughout a site?

During pre-demolition assessments, consultants do not know, so we …

- Assume hazards are present
- Take precautions to minimize exposure
- Conduct assessment using SOPs
- Work under a written HASP as per HAZWOPER

OSHA Regulations
HAZWOPER

What is included in a Health and Safety Plan (HASP) under HAZWOPER?

- Team structure
- Health & Safety Training
- Written Work Plan
- Specific Standard Operating Procedures
- SOPs for contingencies

OSHA Regulations
HAZWOPER

What are the elements of a HASP?

- Hazard Analysis
- Employee Training
- Personal Protective Equipment
- Medical Surveillance
- Personnel Monitoring
- Sampling Methods and Techniques

What are the elements of a HASP?

- Site Control Measures
- Decontamination Procedures
- Emergency Response Planning
- Spill Containment Program
- Other? Example: Confined Space Program

Likewise, the Demolition Contractor Has to Plan For Hazards That May be Uncovered.

- If the potential exists for hazardous substances or wastes to be discovered during demolition or site work, it is prudent to operate under a HASP.
- This way, when problems arise, the work schedule may be able to continue without delay damages, injuries and citations.

So, We Are Planning a Project…What Should We be Considering Far in Advance?

SIX QUESTIONS regarding contamination…

- What hazards are likely present?
- How are we to assess hazards?
- How are we going to manage hazards?
- What wastes will be generated?
- How are we going to prevent releases?
- How are we going to manage wastes?

By Resolving These Six Questions Proactively We Can:

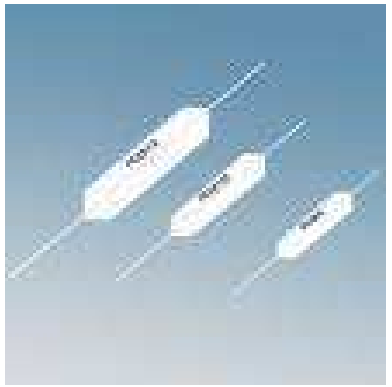
- Protect the environment
- Protect the public
- Protect workers
- Reduce regulatory and tort liabilities
- Lower risks
- Enhance the odds that the project will remain on schedule and on budget

What About Uncommon Building-Related Issues?

- Radio active thorium in soil example
- This is why environmental site assessments are conducted prior to property transactions…and perhaps prior to design development

What About Uncommon Building-Related Issues?

- Lead ceramics dust in building example
- Again, this is why environmental assessments are conducted prior to property transactions…and perhaps prior to design development



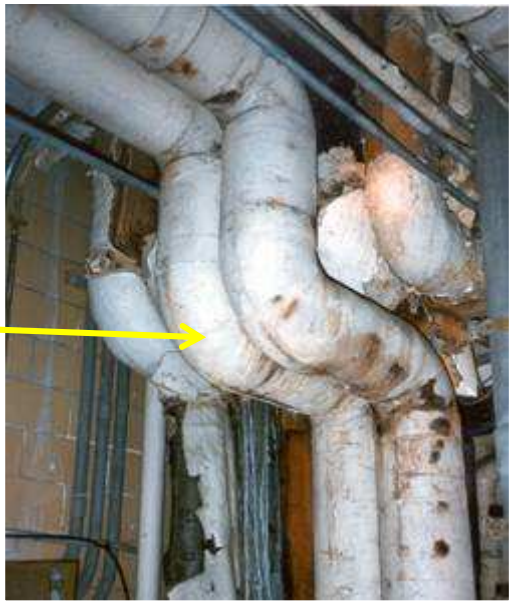
What About Uncommon Building-Related Issues?

- Hexavalent chromium in soil example
- Again, this is why environmental assessments are conducted prior to property transactions…and perhaps prior to design development

Asbestos Due Diligence Issues

- Pre-demo survey as per EPA? 1970s
- Are pipes labeled as per OSHA? 1980s
- An OSHA-compliant asbestos survey? 1996
- Are employees trained per OSHA? 1996
- What are the costs?

Unlabeled suspect (presumed) asbestos-containing pipe insulation.



Asbestos
OSHA General Industry Standard @ 1995

Duties of Building Owners

Must keep records of in-place presumed asbestos and inform other employers and their employees who perform housekeeping activities about the presence and location of presumed asbestos.

Lead Due Diligence Issues

- Is lead-based paint (LBP) present?
- What is the condition of the LBP?
- What is the intended use of the building?
- Are there LBP hazards? What is the risk?

Lead Due Diligence Issues

- Is the general contractor aware of LBP?
- Are employees aware of LBP?
- Lead compliance plan as per OSHA?

Lead Due Diligence Issues

- Are lead or other toxic metals present in settled dust throughout the building?
- If contaminated dust is present, how will that impact demolition and salvage operations?

Lead Due Diligence Issues

- Are lead or other metals of concern (e.g., Cd, Zn) present on metal framing components?
- If so, how will that impact demolition and salvage methods…and could it result in a change of scope if not addressed in the contract documents?

OSHA's Lead in Construction 29 CFR 1926.62

"Where lead is present in paint at concentrations greater than NON DETECTABLE, all worker protection measures and work practice regulations apply to workers performing specified 'trigger tasks', such as demolition or paint removal activities, until the results of a worker exposure assessment are known. At that point, appropriate protective measures and work practices can be assessed and utilized to minimize exposures."

OSHA Lead Compliance Plan-Outline (1-8)

1. Location of the project
2. Known areas of lead hazards
3. Description of the activities which will take place that will emit lead
4. Schedule
5. Equipment and materials
6. Crew
7. Competent person
8. Control measures

OSHA Lead Compliance Plan-Outline (9-17)

9. Report of technology considered in meeting the PEL
10. Respiratory protection program
11. Protective clothing
12. Hygiene facilities and practices to be used on the project
13. Air monitoring data which documents the source of lead emissions
14. Medical surveillance program
15. Training
16. Multi-contractor work sites
17. Administrative costs

Common Mercury Due Diligence Issues

- Are fluorescent light fixtures present?
- Are mercury fluorescent tubes present?

- Impact on waste generator status?
- How will these be managed, recycled or disposed?
- Are employees trained?

Common Mercury Due Diligence Issues

- Are mercury thermostat switches present?
- Other sources of mercury?
- Disposal plan for mercury?
- Impact on waste generator status?
- Are employees trained?
- Have there been spills in the past?

Common PCBs Due Diligence Issues

- PCB transformers present?
- Are fluorescent light fixtures present?
- Are PCB ballasts present in the fixtures?

- Have they leaked in the past?
- Cleanup and disposal plan for PCBs?
- Impact on waste generator status?
- Are employees trained?

Tanks, Spills, Site History Due Diligence Issues

- Is chemical contamination present on site?
- Are underground storage tanks present?
- Are aboveground storage tanks present?
- Are drywells present?
- A history of release(s) on site or nearby?
- Extent of release? Soil only? Ground H_20?
- Impact on development plans, schedule, disposal, costs, and cost recovery?

Abandoned Chemical Containers
Due Diligence Issues

- Are abandoned chemicals present?
- Are employees trained?
- Have waste chemicals been characterized?
- Disposal plan?
- Impact on waste generator status?

Hazardous Chemical Characteristics

Ignitable Waste	I
Corrosive Waste	C
Reactive Waste	R
Toxicity Characteristic Waste	E
Acute Hazardous Waste	H
Toxic Waste	T

Other Common Potentially Hazardous Substances

- Construction Dust
- Pigeon Guano
- Bat Guano
- Rodent Feces
- Human Excrement
- Bacteria
- Mold

Other Common Potentially Hazardous Substances

Construction Dust

- A witches brew
- Irritants
- May contain allergens, pathogens, toxins
- Must be controlled by design, especially during renovation in occupied buildings…
  Otherwise it elevates the risk of IAQ complaints, illness, etc.

Other Common Potentially Hazardous Substances

Bat Guano

- Histoplasmosis

Rodent Feces

- Hantavirus

Other Common Potentially Hazardous Substances

Human Excrement

- Blood-borne pathogens
- Pathogenic bacteria
- Other?

Other Common Potentially Hazardous Substances

Mold

- Mold particles are irritants
- They may cause other effects

Mold And Moisture Intrusion Due Diligence Issues

- Is the building sick?
- Has the building leaked?
- Is the building leaking?
- Condition of the envelope?
- Condition of structure?

Top photo: Conditions OK?

Lower photo: Conditions Bad!

Mold And Moisture Intrusion
Due Diligence Issues

- Is mold present?
- Are other regulated building materials and dusts present?
- How will exposure to dust, mold and other potential allergens be controlled?
- Who are the potential receptors, what are their risks, how will they be informed and protected from exposures during construction?

Pollutant Source(s)

Pathways

Driving Forces

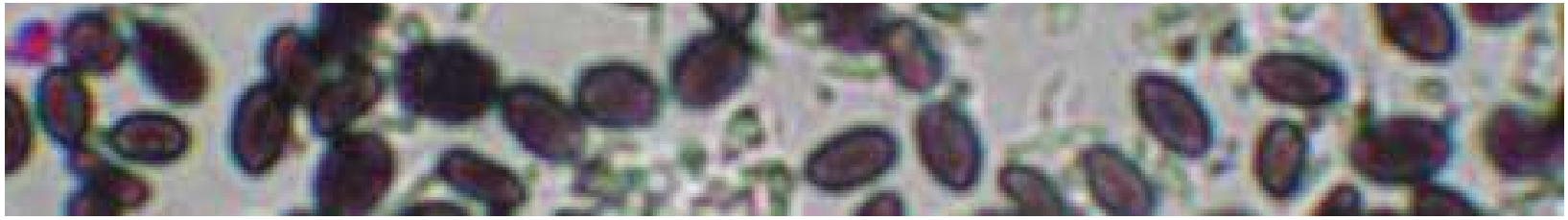
For exposure to occur to a receptor through the expected route of entry (inhalation), three factors must be present. This exposure model applies to all regulated building materials – and potentially hazardous substances - during renovation and demo.

Mold

If mold, asbestos materials, lead paint and other potentially hazardous substances are present, they can have a huge impact on project costs, schedule, execution and liability. Owners have a legal duty to notify others of expected and known hazards anticipated at the site.

Why is Mold Potentially an Issue?

- Health
- Liability
- Litigation
- Insurance/cost recovery
- Perception



Health Effects

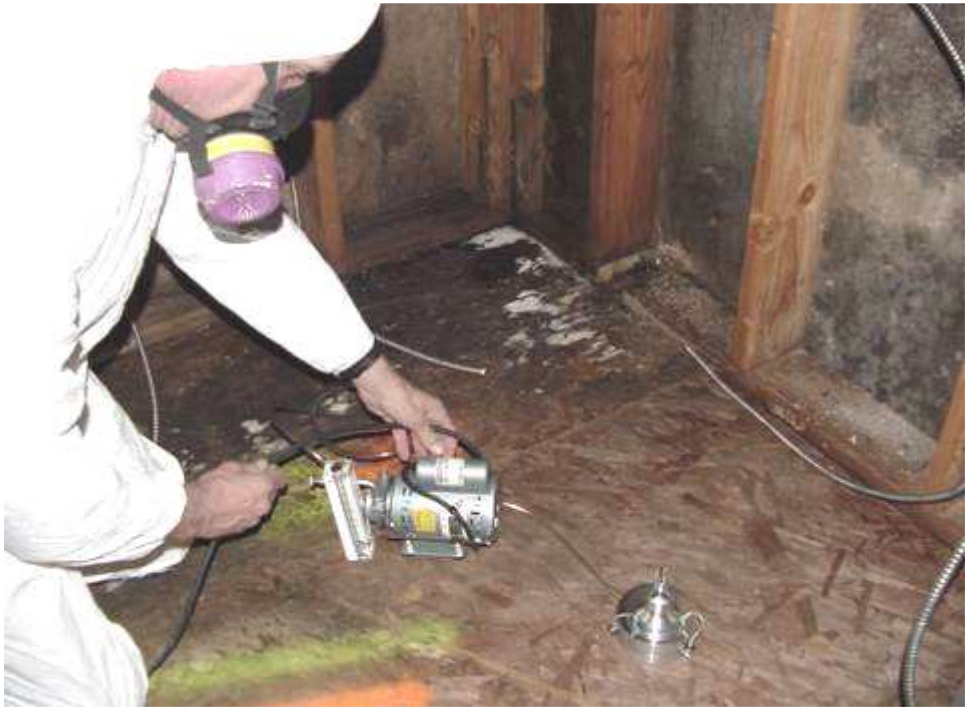
- Irritation
- Allergenic
- Infections
- Toxic Responses

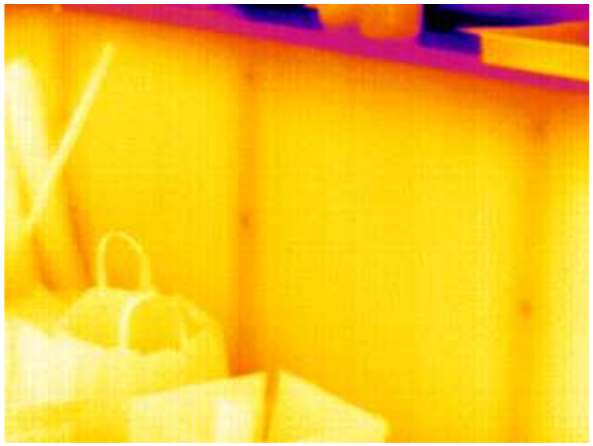
What Conditions Promote Mold Growth?

- Moisture
- Humidity
- Temperature
- Carbon
- Oxygen
- Time

Mold

A problem must be assessed to define a scope of work and to consider options to bring resolution. Testing for mold (left) may not be useful; testing for moisture and dry rot using infrared thermal imaging (right) may yield better information on hidden "concealed" conditions.





Which Mold Remediation Response Options Are Reasonable?

- A huge issue! (remove, treat in-place, enclose, ignore?)
- We have guidance, but no clearly defined regulatory mandates and specifications. (EPA, NYCDOH, CDC…)
- It depends on where we get our guidance. (trade groups, federal agencies, state and local government)

Which Mold Remediation Response Options Are Reasonable?

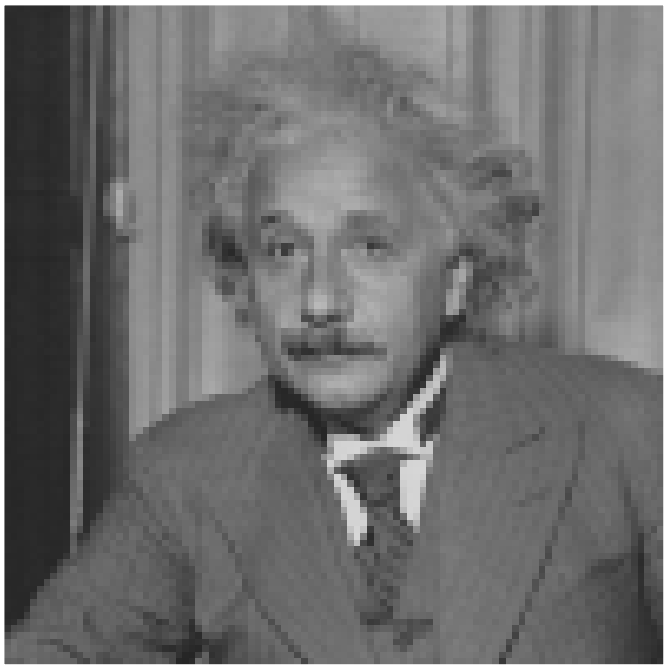
Ultimately, what are the project goals, and the business objectives of the owner?

- Resolve moisture issues
- Remove contamination
- Re-establish a “normal indoor ecology”
- Prudent, safe, cost effective (“standard of care”)

Who Determines Which Mold Remediation Response Options Are Reasonable and Which Are Inappropriate?

It depends on whom you talk to, but important are:

- Regulatory precedence(s)
- Legal precedence(s)
- Scientific consensus
- Common sense



Lessons Learned:

Owners, designers, and bidders must understand the environmental due diligence risks associated with the specific project.

A clearly defined, reasonable and appropriate scope of work is necessary for successful bidding and project execution.

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