



INTRODUCTION TO WATER DAMAGE

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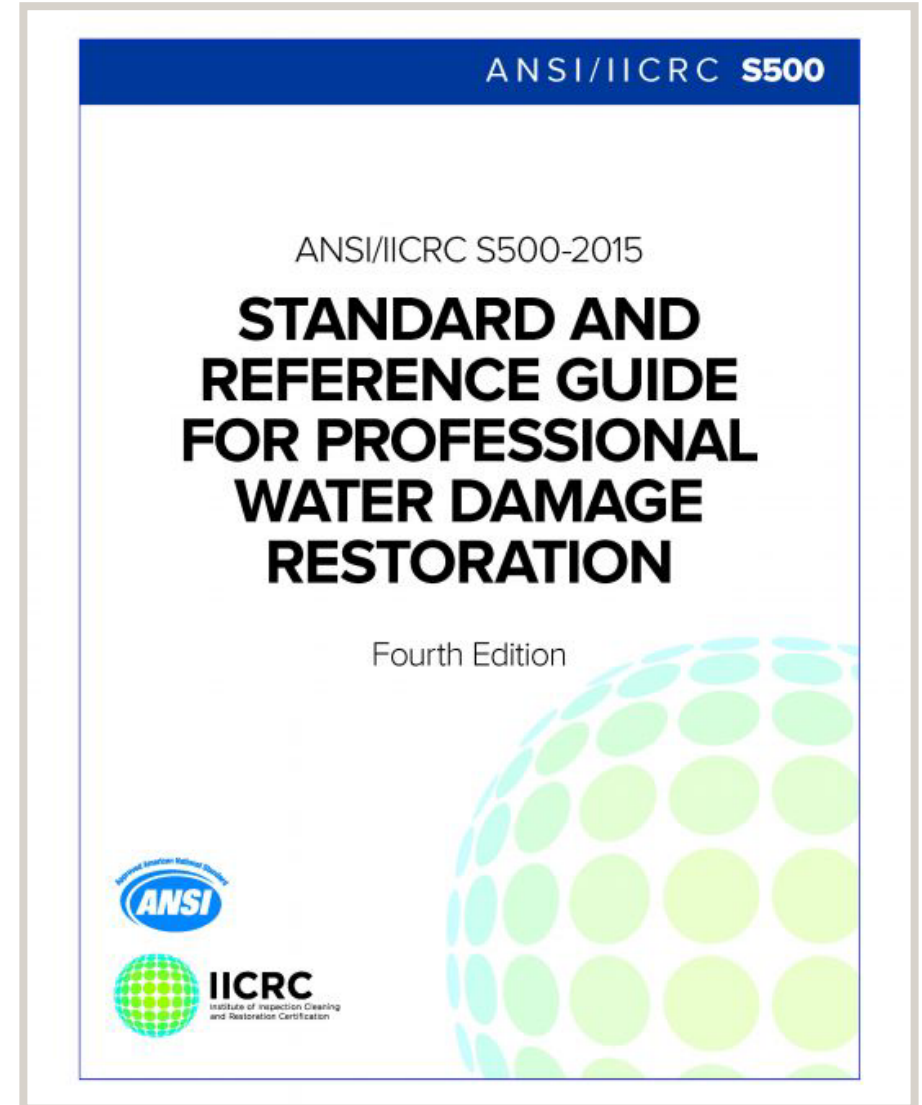
November 15, 2022

TODAY'S AGENDA

- Water Damage – An Overview
- Water Categories & Classes of Water Losses
- Water Removal & Sanitization
- Moisture Readings & Documentation

WATER DAMAGE - RESTORATION

- IICRC – Institute of Inspection Cleaning and Restoration Certification
- IICRC S500 is standard used for water damage restoration



CATEGORIES OF WATER

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- Category 1 – Clean Water
- Category 2 – Grey Water
- Category 3 – Black Water

CATEGORY 1 – CLEAN WATER

Water that originates from a clean source and does not pose substantial health risk, such as:

- Broken water supply line
- Tub or sink overflow with no contaminants



CATEGORY 1 – CLEAN WATER

Category 1 water can deteriorate to Category 2 or 3 for many reasons:

- Contact with contaminated building material
- Mixes with soils
- Elapsed Time



Odour can indicate category 1 has deteriorated

CATEGORY 2 – GREY WATER

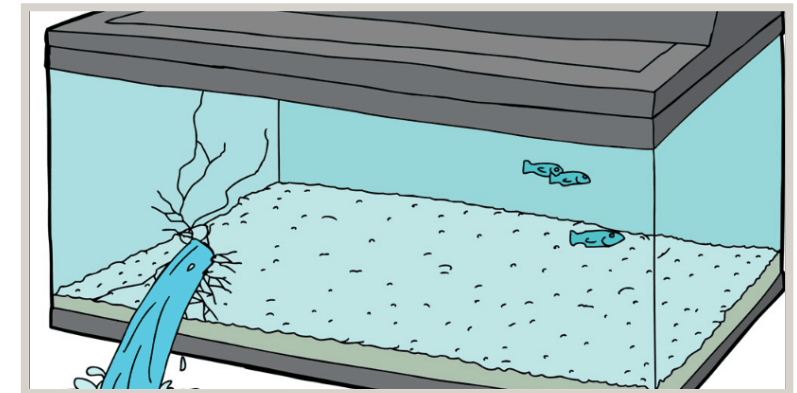
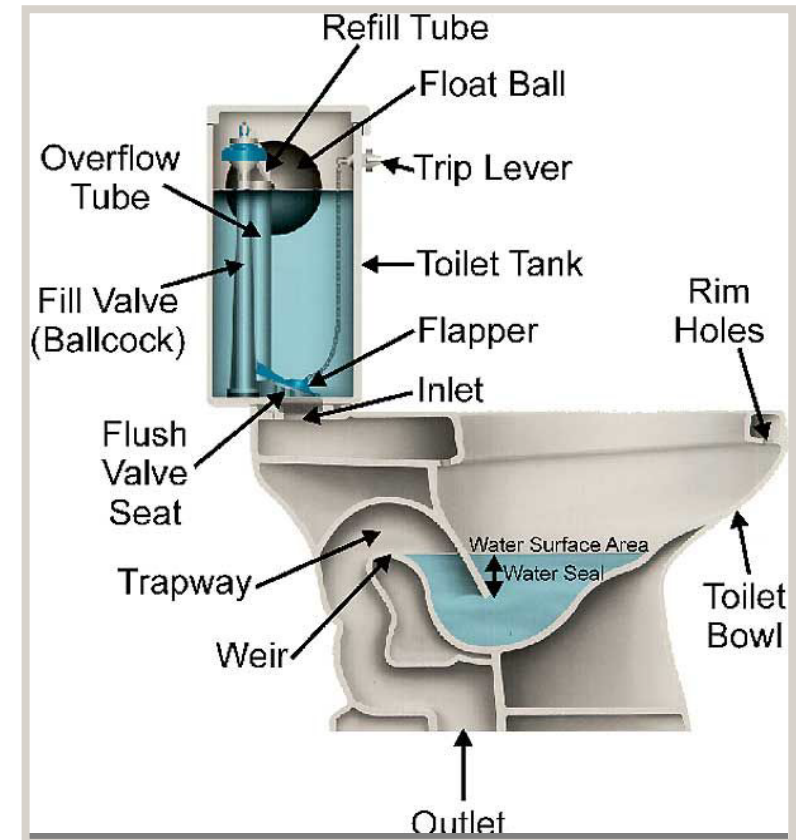
Water that contains significant contaminants and has the potential to cause sickness or discomfort, such as:

- Contact with contaminated building materials
- Mixing with soils
- Elapsed time

CATEGORY 2 – GREY WATER

Potential sources of category 2 water are:

- Discharge from washing machines or dishwashers
- Discharge from fire suppression systems
- Broken aquariums
- Seepage through foundations
- Melting ice or snow/falling rainwater



CATEGORY 3 – BLACK WATER

Water that is grossly unsanitary & can contain pathogenic agents such as:

- Sewage discharge from fire suppression systems
- Toilet backups
- Ground surface water (overland flooding), carries organic matter into structures



CATEGORY 3 – BLACK WATER, HEALTH & SAFETY

The cleanup of black water is more than mopping and scrubbing, there can be serious health risks and therefore extra health & safety precautions are required during cleanup.

- Increased vaccinations
- PPE – puncture proof gloves, Tyvek suits, safety rubber boots, respirator, eye protection
- Air scrubber



TIME EFFECT ON CATEGORIES

- Rapid response is key to reducing potential risk of deteriorating categories
- Water extraction, removal of wet materials and starting the drying process promptly is essential to preventing escalation
- In the right conditions, mould growth can start to occur within 48 hours
- Time and temperature are the enemy



CLASSES OF WATER LOSSES

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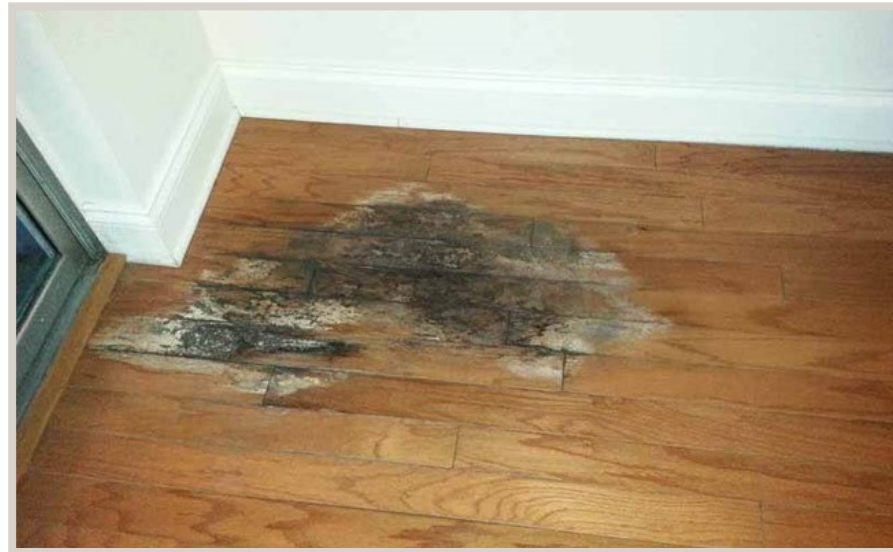
Once the category of water is determined it can also be assigned a “class” of water damage. Classifying damage gives an indicator of how much water is involved and the correct remediation processes that will be required.

Water damages can be divided into 4 classes:

- Class 1
- Class 2
- Class 3
- Class 4

WATER DAMAGE CLASS ①

Water affects only part of a room, damage is confined to a small area



WATER DAMAGE CLASS ②

Water affects the entire room and wicks up the wall less than 24”



WATER DAMAGE CLASS ③

Water that may come from overhead affecting ceiling, walls & floors



WATER DAMAGE CLASS ④

Water that affects hardwood flooring, subfloors, concrete, etc., making it more difficult to dry



WATER REMOVAL AND SANITIZATION

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- **Physical Removal**

- Pump standing water, drain water out of ceiling and wall cavities, vacuum water from flooring and horizontal surfaces

- **Evaporation**

- Achieved through use of air movers, inject dry, etc.

- **Dehumidification**

- Achieved through use of dehumidifiers

HAZARDOUS MATERIAL IDENTIFICATION AND REMOVAL

HMI stands for Hazardous Material Inventory (DSS in other provinces)

- What is it and who provides this list?
- What is included in an HMI?
 - Asbestos
 - Lead
 - Mercury
 - Silica
- What information is provided?
 - Types
 - Locations
 - Quantities



HAZARDOUS MATERIAL IDENTIFICATION AND REMOVAL



HAZARDOUS MATERIAL ABATEMENT

- **Asbestos and/or Lead**

- High, Moderate & Low risk procedures
- NOP (Notice of Project)
- Specialized work, skilled and experienced workers
- Testing, Monitoring and Consultants
- Specialized (and costly) disposal

- **Mould**

- Level I, II & III procedures
- Specialized work, skilled and experienced workers
- Testing, Monitoring and Consultants.
- Generally, no specialized disposal



SELECTIVE DEMOLITION (NON HAZARDOUS)

Why are we removing some things and not others?

- Drivers of removal vs. drying/ repairing
 - High, Moderate & Low risk procedures
 - Time
 - Cost
 - Potential of successful drying/saving of specific (specialty) items
 - Historic value or items that are no longer available



CLEANING AND SANITIZATION

Why are we doing this more than once?

- Types of Sanitizing agents
 - Biologicals
 - Botanicals
 - Chemicals (Quats, Chlorines, etc.)



DRYING EQUIPMENT & TOOLS

DRYING EQUIPMENT

✓ Water Removal Equipment



Pumps
Extraction units

✓ Air Moving Equipment



Centrifugal air movers
Axial fans
Scrubbers

✓ Dehumidification Equipment



Conventional refrigerant
Low-grain refrigerant (LGR)
Desiccant

✓ **Heating Equipment



Direct fire heaters
Electric heaters
Radiant heaters

DEHUMIDIFIERS – STANDARD VS. LGR

STANDARD

- Lower capacity
- Does not function well below 68 degrees - ice forms on coils
- Will not produce dry air to below 55gpp



LOW GRAIN REFRIGERANTS (LGR)

- Higher capacity
- Can continue dehumidifying air down to 33 degrees
- Can produce dry air down to 30gpp



AIR MOVERS – AXIAL VS. CENTRIFUGAL

AXIAL

- Move large volumes of air, but at low pressure
- Best for general use



CENTRIFUGAL

- Lower flow rate, but at higher pressure
- Best for directional and concentrated drying



DRYING PROCESS



DRYING EQUIPMENT SET UP

- **Air Movers**

- Set at 45-degree angle to wall
- Aim in same direction to create vortex
- High velocity – increases evaporation

- **Dehumidifiers**

- Place where no restrictions to air flow in and out of unit
- Generally, position in centre of room
- If possible, avoid placing over hardwood, laminate floors
- When drying several rooms, place units' equal distance apart



DRYING RECORDS & MOISTURE READERS

DRYING RECORDS

- Documenting the drying process is important
- A daily record of the drying process require from start to finish
- Provides proof to client that water damage has been properly remediated
- Is a valuable legal document if questions should arise in future

firstonsite
Restoration

Daily Psychrometric Job Control

Job: 0317 - DC 106
 Date: Dec 01 117
 Name of Insured: JIM BROWN
 Date of Loss: Dec 01 117

Category of Water	1	2	3
Category of Loss	1	2	3
Classification of Loss	1	2	3
HVAC system affected	Yes	15	

Inspection			Outside			Affected Area			Unaffected Area			Dehumidifier		
Day	Date	Time	Temp	%RH	SH GPP	Temp	%RH	SH GPP	Temp	%RH	SH GPP	Temp	%RH	SH GPP
1	Dec 01	9:00am	40.0	30.0	11.0	44.0	80.0	36.0	30.0	50.0	54.0	75.0	40.0	46.0
2	Dec 02	10:00am	41.0	50.0	19.0	72.0	60.0	30.0	72.0	46.0	53.0	75.0	40.0	72.0
3	Dec 03	9:00am	50.0	56.0	22.0	72.0	40.0	44.0	77.0	39.0	46.0	75.0	39.0	47.0

Structural Material Moisture Content (MC) Record

Location	Material	Date	MC	Date	MC	Date	MC
Kitchen - North Wall	Drywall - 1/2"	Dec 01	11.0	Dec 02	10.0		
Kitchen - North Section Floor	Hardwood	Dec 01	12.0	Dec 02	11.0	Dec 03	5.0

MOISTURE METERS

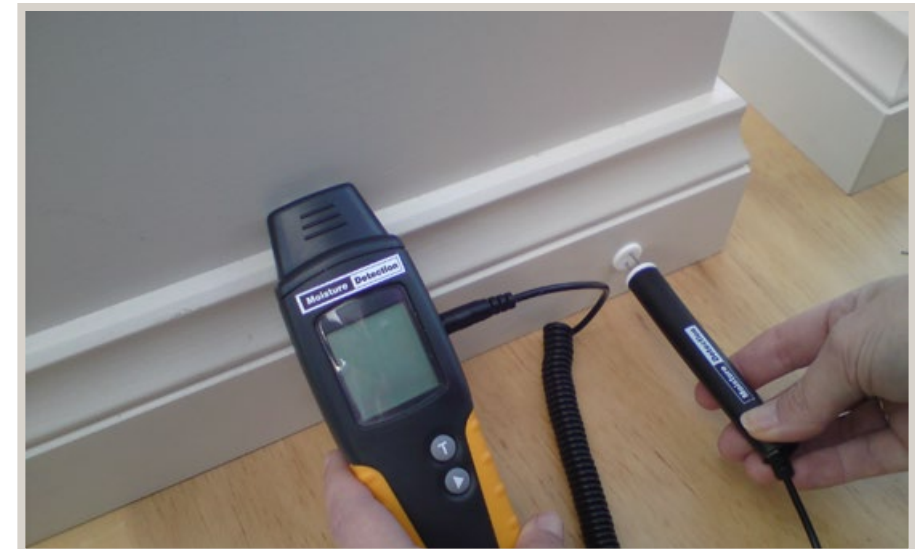
- Instruments used to measure moisture levels
- Thermohygrometer – multi functional meter that measures air temperature, humidity level, and gpp
- Moisture Meter – Detects elevated moisture through conductivity



MOISTURE CONTENT IN MATERIALS

To create a drying record, documenting of the following is required:

- Moisture readings of potential wet materials required
- Document location and type of materials
- Use comparison to unaffected areas (dry standard)



THERMAL IMAGING & WATER DAMAGE

Thermal Imaging is an excellent tool for identifying potential water damage:

- Does not show moisture in materials
- Identifies differences in surface temperature
- Evaporative Cooling: An indicator of water damage



REMINDER...

- Training and re-training is critical
- Know your building
- Procedures need to be documented, up-to-date and clearly posted
- As a partner in emergency response planning, mitigation and restoration, we are always available to conduct similar exercises across Canada for your business

“

**You cannot escape the responsibility
of tomorrow by evading it today.**

”

– Abraham Lincoln



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