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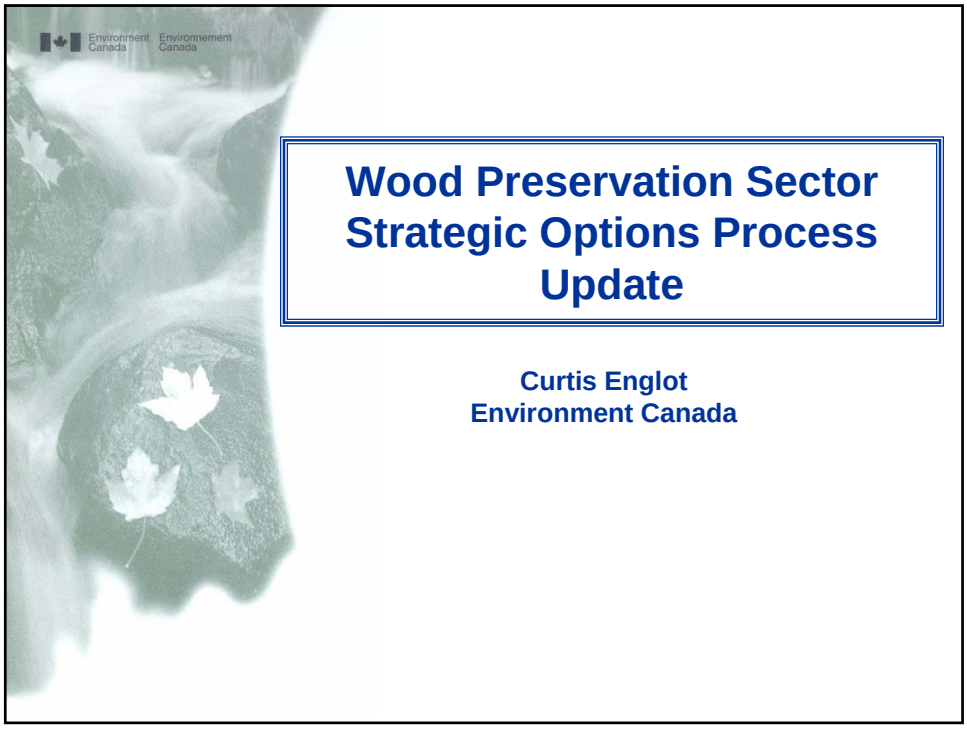

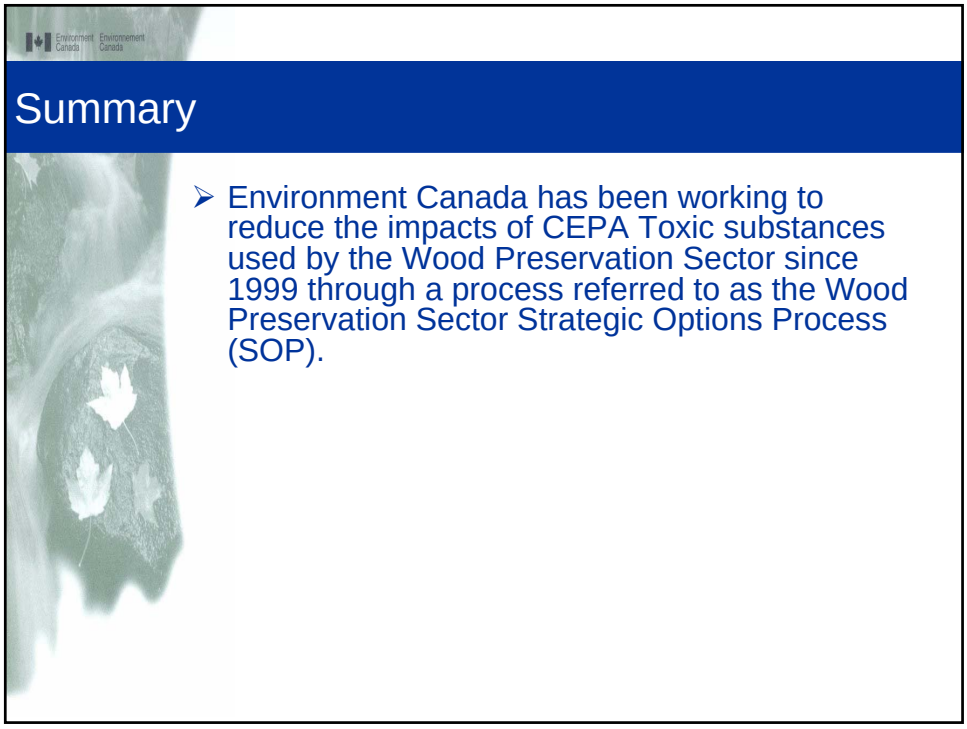

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CEPA-toxic Substances

CEPA Toxic Substance	Wood Preservative
Chromium VI **Inorganic arsenic compounds**	**Chromated Copper Arsenate (CCA)** **Ammoniacal Copper Zinc Arsenate (ACZA)**
Polycyclic Aromatic Hydrocarbons (PAHs), **Creosote-impregnated waste materials**	**Creosote**
Polychlorinated dibenzodioxins (Dioxins) **Polychlorinated dibenzofurans (Furans),** **Hexachlorobenzene (HCB)**	**Pentachlorophenol (PCP)**

Summary

- Environment Canada has been working to reduce the impacts of CEPA Toxic substances used by the Wood Preservation Sector since 1999 through a process referred to as the Wood Preservation Sector Strategic Options Process (SOP).
- Risk management efforts associated with the sector include all phases in the life-cycle of treated wood; i.e. chemical production, treatment of wood, use of treated wood, and final disposal.

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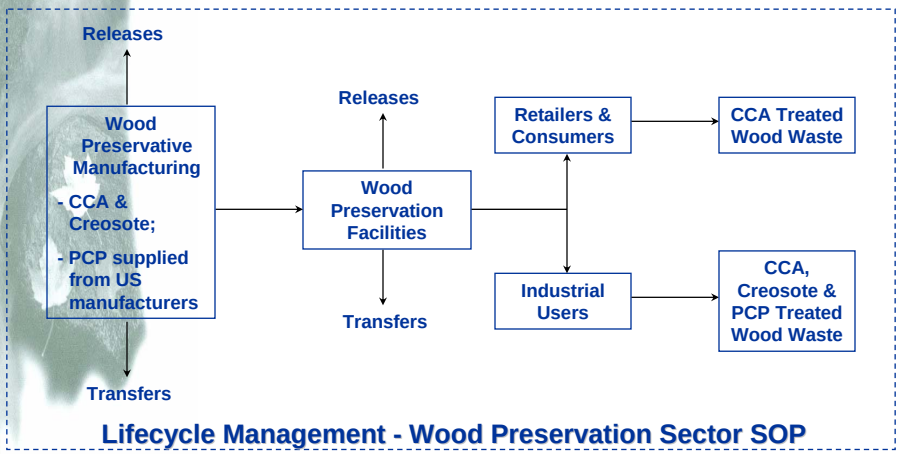
SOP - Lifecycle Management



Lifecycle Management - Wood Preservation Sector SOP

Wood Preservation Strategic Options Process (SOP)

- SOP initiated December 1994 with Extensive Consultations
- July 1999 Consultation Report
- 52 Recommendations
  - General (PMRA and provinces)
  - Wood preservative manufacturing
  - Wood preservation facilities
  - Treated wood use (industrial & consumer-based)
  - Management of treated wood waste

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Wood Treatment Facilities

- Implementation of TRDs.
- Initiated in 2000 with Assessment 2000.
- Implementation plans submitted by Dec. 31, 2001.
- Annual Reporting by Dec. 31 of every year.
- Random Audits every year.
- Deadline to comply – Dec. 31, 2005.
- Final Audits underway and continuing.
- CITW Certification Program to sustain.

Wood Treatment Facilities

- Pollution Prevention Notice Published Oct. 22, 2005 to require implementation of TRDs for 5 facilities not meeting the requirements of the voluntary program.
- Remaining 60 Wood Treatment facilities need to be credited for their commitment to the voluntary approach.
- The final audits are critical – need to prove that voluntary approach has worked.
- Certification program also critical – need to ensure progress is sustained.

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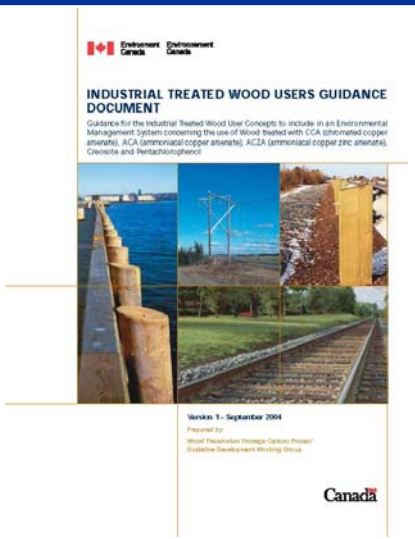
Industrial Users of Treated Wood

- Developed Industrial Users Guidance Docement (UGD).
- Distribution Ongoing.
- Compiling survey results.
- Implementation by users next step.



Industrial Users of Treated Wood

- The Users Guidance Document (UGD) is designed to promote environmentally responsible management of the purchase, use, storage and disposal of treated wood.
- Not meant as a prescriptive document, but as a flexible tool to allow users to meet the recommendations.
- Target audience includes railways, power utilities, phone companies, and government department users of treated wood (such as transportation, fisheries and natural resources departments).

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Industrial Users - Background

- CEPA toxics released to the environment via leaching, gravitational migration from the wood to the soil, biodegradation and/or photo degradation, and volatilization.
- Proper treatment of new wood has biggest impact on minimizing in-service releases.
- Appropriate recycling, reuse and disposal practices are used when wood in taken out of service can also reduce environmental releases.
- In addition recommendations have been made to ensure that information about release quantities and their impact are collected.

Purchasing Policies

- Recommendation 1 – Use purchasing policies that make certain any treated wood purchased has been treated properly.
  - Purchasing specifications should include treatment quality controls.
  - Should reference Canadian Standards Association (CSA) standards, company specifications, Best Management Practices or meet acceptable international standards.
  - Only purchase wood from facilities that meet Wood Preservative Facilities Technical Recommendations Document (TRDs).

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Purchasing Policies

- Appendix V of the UGD contains a listing of relevant standards and guidelines

Table 3A: Canadian Wood Preservation Standards (compiled from CSA, 1997)

Title / Standard Reference*	Product Examples	Allowable Wood Species	Allowable Preservatives** (Commercially readily available)	Assay Retentions (kg/m3)	Penetration	Comments
Pressure Treatment of Lumber, Timber, Bridge Ties and Mine Ties CSA 080.2	Lumber and timbers for general construction *above-ground or ground contact* (incl. Highway and bridge timbers)	Pines, True Firs, Coast Douglas Fir, Eastern and Western Hemlocks, Western Larch, Spruces, Birch, Maple, Oak, Beach	Creosote Creosote Petroleum Pentachlorophenol CCA, ACA Creosote Creosote Petroleum Pentachlorophenol CCA, ACA	*Above Ground* 80.0-128.0 80.0-128.0 4.0-6.4 4.0 *Ground Contact* 96.0-160.0 96.0-160.0 4.8-8.0 6.4	In most species min. 10 mm in above ground applications, 13 mm in fresh water or ground contact, and 90% of sapwood.	The penetration depth depends on the wood species and size/exposure of the product. Copper naphthenate and ACQ have been approved for some species.
Pressure Treatment of Decking Lumber with Waterborne Preservatives CSA 080.32	Above-ground decking lumber for residential uses, max. thickness 50 mm	Pines, True Firs, Spruces, Coast Douglas Fir, Western Hemlock	CCA, ACA CCA, ACA	*Above Ground* 6.4 *Ground Contact* -	5 mm and 90% of sapwood	Standard is intended for wood in residential construction
Pressure Treatment of Piles CSA 080.3	Land, Fresh Water and Foundation Piles	Coast & Interior Douglas Firs, Jack Lodgepole, Red, Southern, Ponderosa Pines, Oak	Creosote Creosote Petroleum Pentachlorophenol CCA, ACA Creosote Creosote Petroleum Pentachlorophenol CCA, ACA	*Above Ground* - - - - *Ground Contact* 160.0-192.0 160.0-192.0 12.0 12.0	Depending on Species	Reused piling requires reconfirmation of wood structural integrity and treatment adequacy

Storage Guidelines

- Guidelines provide Best Management Practices for the siting, design, operation and maintenance of treated wood storage facilities.
- Based on type, duration and volumes.

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Locating Storage Facilities

- Recommendation 2 – Locate storage facilities appropriately.
  - Potential impacts to the environment should be considered during the siting process.
  - Engineering designs may be required when storage areas require some type of regulatory approval.
  - If not subject to regulatory approval, should at still ensure that environmental impacts are mitigated.
  - In some instances, operational practices may be a more practical mitigating tool than design.

Temporary Storage Facilities

- Refers to short term areas (less than 90 days) adjacent to the construction site.
- Volumes and durations prior to installation should be minimized.
- If there has been any visual environment impacts the area shall be remediated to pre-storage conditions.

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Managing Existing Storage Facilities

- Recommendation 3 – Managing storage facilities for treated wood.
  - Should have standard operational practices and training programs for staff.
  - Existing facilities should have more stringent operational practices if design aspects can not be incorporated.

Managing Existing Storage Facilities

- See CCME and/or provinces for environmental guidelines for substances found in treated wood.
- Should reference guidelines to evaluate impacts.
- The table below from Appendix VI shows some of these relevant guidelines.

Table 4A: Recommended Soil Quality Guidelines (CCME, March 1997)

Parameter (mg/kg)	Land Use			
	Agricultural	Residential/Parkland	Commercial	Industrial
Inorganic Arsenic	12	12	12	12
Total Chromium	64	64	87	87
Chromium (VI)	0.4	0.4	1.4[3]	1.4[3]
Naphthalene[1]	0.1	0.6	22	22
Pentachlorophenol[2]	7.6	7.6	7.6	7.6

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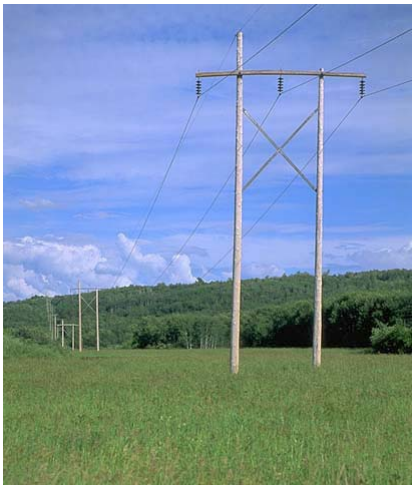
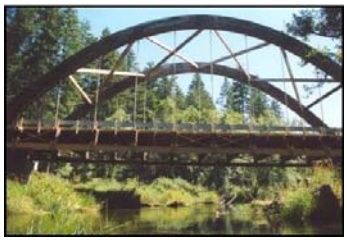
Installation and Handling

- Recommendation 4 – Consider environmental and health impacts during installation.
  - Policies on installation processes
  - Include treatment types and/or distances from water wells, watercourses, sensitive sites, etc.



Installation

- **Scheduled** to minimize the risk to aquatic organisms and should not occur during migration, spawning, or other sensitive life stages.
- **Designed** to minimize the amounts of treated wood in contact with water.
- **Treated** at the required dimensions; minimize sawdust, shavings and other debris.
- **Clean-up** and disposal of all debris and preservatives.



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Handling

- Proper protective gear, including gloves and dust masks for sawing and other machining be worn.
- See Material Safety Data Sheets (MSDS) or www.citw.org/using_specifying/industrial/guidelines/
- Consumer Information Sheets www.ccasafetyinfo.ca

Sensitive sites

- Recommendation 5 – Consider alternatives and in service re-treatment of treated wood in sensitive areas.
  - A “sensitive site” is any area for which additional factors must be considered and care taken for the well being of the area.
  - Primarily applies to new construction but can be used during repair and upgrades.
  - Does NOT require that the facility replace currently in service treated wood, adjacent to sensitive sites.
  - Alternatives can include preservatives that do not contain CEPA toxic substances or alternate materials.

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Sensitive sites

- Should have at least one of the following in place:
  - Documented work practices, and/or recorded decisions, and rationales that demonstrate alternatives to CEPA toxic preservatives were considered prior to choosing construction materials.
  - Operating standards that limit or eliminate wood treated with CEPA toxic substances.
  - Programs that actively review alternatives to CEPA toxic substance treated wood.
- Substances that are not CEPA toxics should be the first choice when conducting in service re-treatment of treated wood in sensitive areas.

Encouraging Re-use

- Recommendation 6 – Re-use treated wood in a manner that prevents or minimizes:

  a) preservatives being released to the environment

  b) risks to human health

  - Look for alternative applications for used treated wood that still has structural integrity.
  - Should consider regulatory requirements and additional engineering/operational control when removing and reusing treated wood.

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Tracking post-use wood

- Recommendation 7 – Develop procedures to keep account of treated wood taken out of service. Whenever transfer of possession occurs, include an advisory bulletin for the subsequent user that details:
  - a) that wood has been treated with a wood preservative
  - b) any suggested management practices related to its future handling and use

Educating Subsequent Users

- Should document sales of post-use treated wood and include information bulletins to subsequent users.
- Draft release form found in Appendix VII.
- Some practices to be included in release form:
  - Not using treated wood in residential interiors.
  - Not using treated wood in situations where the preservative may become a component of food or animal feed or bedding.
  - Not using treated wood where it may come into contact with drinking water.
  - Not burning treated wood.
  - Not using treated wood in applications where structural integrity is important, unless certified by a qualified professional.

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Waste Management Hierarchy

- Recommendation 8 – When disposing of treated wood, utilize the recommended waste management hierarchy, which includes reuse, recycle and recovery options.
  - Reuse - wood being reused for its original purpose
  - Recycle – processing to recycle into new products, into fibre or as energy
  - Landfilling as a final option.

Waste Management National Strategy

- Short term goal of reducing the volume of treated wood going to landfill by 20% by 2005.
- Accomplished via hierarchal waste management options:
  - Waste Elimination
  - Waste Reduction
  - Waste Reuse
  - Waste Recycling
  - Waste Treatment
  - Waste Disposal

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Waste Management Options

- Waste Elimination
  - Minimize treated wood use by using alternative preservatives and construction materials, thus reducing the amount of potential disposed wood.
  - Assure that wood is adequately treated, but not over treated ensures proper useful lifetime and minimizes possibility of premature rejection from use.
- Waste Reduction
  - Maximize the service life of wood through manufacturing procedures and other techniques.
  - Employ pretreatment processes such as drying and incising to achieve improved penetration and retention.
  - Size, shape and bore prior to treatment to minimize the need for less effective field techniques.
  - Improve field applications such as fitting railway ties or poles with anti-splitting devices or larger rail bearing plates that reduce mechanical damage
  - Extend field life through use of technologies such as ground line treatment.

Waste Management Options

- Waste Reuse
  - Use post-use treated wood at another point of service than its original form such as reusing railway ties in landscaping.
  - Utility poles have the potential to be reused for poles, posts, braces, stubs and anchors.
- Waste Recycling
  - Recovery of solid wood, fiber recovery or energy production.
  - Convert treated utility poles into other products such as landscaping products, fencing, etc.
  - Treated portions are removed and are either disposed or shipped for energy production.
  - Treated wood used as a supplementary fuel in industrial boilers, co-generation units or as a fuel for the manufacture of cement.

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Waste Management Options

- Waste Treatment
  - Waste incinerators destroy a wide range of hazardous wastes including PCBs.
  - This option is both expensive and as it does not allow for the recovery of energy, fiber or preservatives, does not support sustainable development.
- Waste Disposal
  - In 2000, 12% of railway ties and 13% of utility poles taken out of service were disposed in landfills.

Table 7: Summary of Costs Associated with Current Waste Management Options for Post-Use Treated Wood in Canada.

Process Item	Process Cost (Year 2000 Cdn $)
Transportation	$0.03-$0.04/ton mile
Sorting & Preparation	
Ties	$0.75/tie (including spike and plate removal)
Poles	
Shredding	$1.50/tie
Reuse	Not quantified. Would be a net benefit
Recycling	
Poles as timbers	$18-$20/pole
Creosote wood for co-generation	Revenue from 0-$19/ton (pre-chipped)
PCP wood for co-generation	$15/ton (pre-chipped)
Chemical Extraction	$310/tonne for CCA
Treatment - Hazardous waste incineration	$200-$1000/ton
Landfill	$14-$100/ton

Continuous Improvement of Practices

- Recommendation 9 – Make every effort to continually improve the handling and management practices of treated wood.
  - Accomplished through regular reviews and audits.
  - Audits verify, identify and resolve deficiencies in protocols and establish whether or not the requirements of each recommendation are being satisfied.
  - Appendix VIII provides a convenient check list to assist in this process.
  - Attend CWPA meetings on a yearly basis!

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Audits, Records, Awareness/Training

- Document and demonstrate that each recommendation has been implemented.
  - Records should be accurate, legible, identifiable and traceable to the activities, products or services involved.
  - Should be stored and maintained so that records are easily retrievable and protected against damage, deterioration or loss.
- Applicable personnel are required to be aware of the necessary documentation to apply the recommendations.
  - Roles and responsibilities should be defined, documented and communicated to ensure these commitments are addressed.

Challenges and Opportunities

- Implement UGD.
- Educate Users.
- Develop solutions to waste issues.
- Continue to improve science and practices.

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