Pest Management Plan

For Wood Structure Maintenance by the BC Hydro and Power Authority

#: ??? 2009-2014

BC hydro

Working Group Draft:
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Executive Summary

About BC Hydro

British Columbia Hydro and Power Authority (BC Hydro) is an electric utility established in 1962 whose purpose is to provide reliable power at low cost for generations. It is a commercial Crown corporation owned by the Province of BC and regulated by the BC Utilities Commission. BC Hydro has become one of North America's leading providers of clean, renewable energy, and the largest electric utility in BC, serving about 95% of the population and over 1.7 million customers in an environmentally and socially responsible way.

BC Hydro's primary business activities are the generation and distribution of electricity. Ninety percent of BC Hydro's generation is produced by hydroelectric means, the rest by thermal. BC Hydro owns substations that distribute electricity over 45,000 kilometres of distribution lines, passing over private, Crown, and federal lands.

> Note that BC Transmission Corporation (BCTC) has a separate Pest Management Plan for the test and treat program on the transmission system (lines with voltages of 69 kilovolts and greater).

About the PMP

As defined in the *Integrated Pest Management Act*:

> A Pest Management Plan (PMP) describes
>
> a) a program for managing pest populations or reducing damage caused by pests, based on integrated pest management; and
>
> b) the methods of handling, preparing, mixing, applying and otherwise using pesticides within the program.

This PMP confirms the corporation's right to use wood preservatives under the *Integrated Pest Management Act* and *Regulation*. In particular, the corporation uses wood preservatives to control wood pests and preserve its wood poles, and to a lesser extent, other wood structures on its property. BC Hydro maintains about 900,000 wood poles on the distribution system.

This PMP is a requirement under Section 58 of the *Integrated Pest Management Regulation*, and in addition it provides for the following:

- public awareness of, and input into, the corporation's pest management activities in the context of IPM

- effective, cost-efficient pest control on wood structures
- responsible use of wood preservatives

Wood Pole Test & Treat Program

BC Hydro carries out a professional Wood Pole Test & Treat Maintenance program to ensure a safe and reliable power supply system, while respecting the environment. The Program inspects wood poles and uses wood preservatives to maintain and prolong the life of poles, and for safety and reliability reasons.

Why Treat Wood?

Wood rot or structural damage from wood-boring insects can cause wood pole failure, and resulting risks to public and worker safety, property damage, and increased service outages. Pest species to be controlled under this PMP are ants, termites, wood-boring insects, and wood-decaying fungi.

The financial and environmental cost of *not* treating wood poles is significantly greater than the cost of treating them. The use of wood preservatives reduces the number of trees that need to be harvested and can extend the service life of wood poles up to five times. Depending on climate, location, and type of wood, wood poles in BC last between 35–70 years with treatment, but only 10–15 years without treatment.

Responsible Treatment

BC Hydro is a leader in the field of wood pole treatment and responsible use of wood preservatives. Over the last 30 years, our Test & Treat program has incorporated new wood preservatives that are safer for the environment. Our Research and Development program carries out studies and other initiatives to find the most effective, state-of-the-art, and environmentally-friendly treatments and alternatives.

Only applicators certified through the Ministry of Environment (MoE) are allowed to handle and apply wood preservatives. Certified applicators must adhere to all legislation, standards, and safety requirements. In addition, before applicators are authorized by the corporation to apply wood preservatives, they must complete an internal work training program.

About Wood Poles and Structures

Wood is used for poles because it is strong, climbable, widely available, renewable, and economical. Wood poles are a proven product, produced and manufactured locally.

Most distribution structures in British Columbia are made of western redcedar, lodgepole pine, or Douglas fir. There are two main types of utility wood poles: transmission poles and distribution poles. Utility wood poles are purchased pre-treated and subsequent preservative use is for maintenance purposes.

Treatment of wood poles includes the cross-arms and timbers. Conductors (wires) carrying the electricity from pole to pole are supported by insulators, which are attached to cross-arms. When two or more poles comprise a structure, they are usually connected to each other with one or more timbers to increase strength, stability, or both. Cross-arms and timbers are purchased pre-treated and not usually maintained with wood preservatives.

Environment and Safety Issues

BC Hydro recognizes the vital roles fulfilled by aquatic, marine, and riparian ecosystems and recognizes the importance of protecting these systems to ensure their long-term sustainability.

The corporation complies with established no-treatment zones (NTZ), which are areas of land that must not be treated with pesticide.

The use of wood preservatives on wood structures is not known to harm the environment or wildlife, because preservatives used are of low to moderate toxicity. Products are either placed inside the pole and the holes plugged, or they are applied externally to the pole below the groundline and covered securely with a bandage. Therefore, the public or wildlife will not come into contact with the preservatives.

Research has shown that wood preservatives used in this program stay bound tightly to the wood pole, which reduces the risk of leaching. They also are not released into the atmosphere, and none of the products used are ozone-depleting.

Because the corporation uses only certified applicators, there is little risk of misapplication, over-application, or spillage of wood preservatives. All applicators carry spill kits and other protective equipment with them.

Definitions

For BC Hydro wood structures, a **pest** as defined in the *Integrated Pest Management Act* refers to primarily wood-destroying insects and fungi.

Wood preservation means to preserve the usefulness and structural strength of wood by chemical treatment.

Wood preservatives are chemicals that are applied to the surface or interior of wood to protect it against both insect and fungal damage.

Integrated pest management (IPM), as defined in the *Integrated Pest Management Regulation,* is a decision-making process that uses a combination of techniques to suppress pests and that must include, but is not limited to, the following elements:

- planning and managing ecosystems to prevent organisms from
- identifying potential pest problems
- monitoring populations of pests and beneficial organisms, pest damage, and environmental conditions
- determining injury thresholds (action levels) in making treatment decisions
- reducing pests to tolerable levels using control techniques
- evaluating the effectiveness of treatments

Program Description

This section of the PMP fulfills the requirements of Section 58 of the *Integrated Pest Management Regulation*. Each heading covers a particular subsection of Section 58, which is reproduced from the Regulation in the boxed text.

Where the PMP Applies: Section 58(1)(a)

> ***58 (1) A pest management plan prepared for the purpose of section 7(1)(a) of the Act must include the following identifying information;***
>
> ***(a) a description of the geographic boundaries of the area to which the plan applies and maps or diagrams showing proposed treatment areas within that area;***

The PMP covers the use of wood preservatives on all distribution wood structures owned by BC Hydro, typically roadside circuits or on distribution easements. They are located throughout BC, and this PMP covers the entire provincial program.

BC Hydro maintains about 900,000 wood poles over 45,000 kilometres of distribution lines, passing over private, Crown, and federal lands. About 90% of Hydro's distribution lines run alongside public road allowances (either underground or above-ground), while the rest are located on public or private lands. Almost all Hydro poles are made of wood. Many Hydro distribution poles are used jointly by Hydro, Telus, and cable companies. All joint use poles are maintained by BC Hydro.

Person Responsible: Section 58(1)(b)(c)

> ***58 (1) A pest management plan prepared for the purpose of section 7(1)(a) of the Act must include the following identifying information;***
>
> ***(b) the person responsible for managing pests in relation to the land described in paragraph (a);***
>
> ***(c) the name and phone number of an individual who is the principal contact for information relating to the pest management plan.***

The person responsible for managing wood structure pests on BC Hydro distribution wood structures is E. Syed, Overhead Maintenance Program Engineer. Phone: 604-528-2183.

The principle contact for information relating to this Pest Management Plan is L. Cooper, Test and Treat Field Manager. Phone 250-371-6908.

Prevention Program: Section 58(2)(a)

58 (2) A pest management plan prepared for the purpose of section 7 (1) (a) of the Act must include the following integrated pest management elements:

> ***(a) a description of the program that will be employed to prevent organisms from becoming pests;***

The Wood Pole Test & Treat Program is primarily a preventive program. Every aspect of wood pole management is geared to prolonging the pole's life, from initial purchase to ongoing inspection and maintenance programs.

The corporation prevents pests from becoming established in wood poles in the following ways:

- Where available and structurally appropriate, western redcedar is used instead of other less durable wood species such as lodgepole or jack pine, which have a higher failure rate especially in wet coastal areas.
- Wood is used for poles because it is strong, climbable, widely available, renewable, and economical. Wood poles are also a proven product, produced and manufactured locally.
- Stringent purchasing requirements have been developed that exceed industry standards for the quality of the poles purchased.
- To prolong the service life of poles, new poles are sterilized to ensure that any wood-decaying fungi or insects present in the trees when harvested are killed.
- The corporation purchases only full-length pre-treated poles, which generally suffer little decay during the first 20–30 years of their life. All new poles are chemically treated in a pressure vacuum system and subjected to a thermal process to "fix" the preservative in the wood. This process ensures that the treatment poses no threat to the environment. The pre-treatment uses CCA (copper chromium arsenate), the most commonly-used wood preservative in North America.

- Emerging technologies are investigated, such as the use of pole liners. (A pole liner is a multi-layered laminate sheaf fitted to the pole's butt end, which keeps the preservative in place).
- Wood poles may be installed in caissons. (A caisson is a long steel barrel, and poles are typically set inside two caissons. The caissons may be filled with gravel and rock to hold up the pole in muskeg or permafrost areas, or the pole is cross-braced so it floats in wet areas.)
- Vegetation is removed from around the poles for inspections and forest fire protection.

Identification of Pest Species: Section 58(2)(b)

58 (2)(b) A pest management plan prepared for the purpose of section 7 (1) (a) of the Act must include the following integrated pest management elements – either

(i) a description of the program that will be employed to identify pests targeted by the plan, or

(ii) identification of the pests targeted by the plan;

There are two basic groups of pests that attack wood poles: insects and fungi, which can attack either above-ground or below-ground. Some pest species can be present in both the above-ground and below-ground portions of the pole. The main pest species to be controlled are:

- **Ants** — Ants frequently seek out high moisture areas in and around wood structures and build their nests in damp wood. In most cases, incipient or advanced decay is already present in wood before ants begin excavating nests. Species of ants that can potentially damage wood include carpenter ants, cornfield ants, and thatching ants.
- **Termites** — Dampwood termites prefer to build their nests in soft, damp wood, which they use for food. Subterranean termites usually live in the soil and only attack poles for food, but they can also attack dry wood.
- **Other insects** — Most damage by wood-boring insects (such as beetles and wasps) is caused by several different species of Powderpost beetles. They are attracted to damp wood and standing poles that already have internal decay. Pole failure is rare, but as the population increases, they may reduce much of the interior of infested wood to a powder.

- **Fungi** — Three fungal types, brown and white rot fungi and soft rot fungi, can attack the cell walls of the pole, reducing the strength of the pole. Most species enter the pole surface from the soil or through above-ground checks or bolt holes. They break down the lignocellulose complex that makes up the cell walls of the wood, causing structural weakening.

Monitoring Program: Section 58(2)(c)

> ***58 (2) A pest management plan prepared for the purpose of section 7(1)(a) of the Act must include the following integrated pest management elements:***
>
> ***(c) a description of the monitoring program that will be employed before or during the pesticide use for assessing pest populations, environmental conditions and damage caused by pests, which program must include a description of***
>
> ***(i) the monitoring methods,***
>
> ***(ii) the frequency of monitoring, and***
>
> ***(iii) the data that will be collected;***

Description of Monitoring Program

The corporation's obligation is to act before a structure fails. Preventive maintenance inspections and the application of remedial chemical treatments to eradicate decay fungi have been standard practice for over 25 years.

Frequency of Monitoring

Current pole maintenance inspections are performed every eight years following the first cycle.

The first treatment occurs 14 years after installation of full-length, treated non-redcedar woodpoles, and after 20 years for redcedar. After that, all poles are placed on an eight-year maintenance cycle. About 90,000 poles are inspected and tested annually.

The eight-year cycle constitutes a preventive program. Even though rot may not yet be present at the time of the maintenance cycle, the risk of incipient rot is significant. Long-term research has shown that this is the most effective, economical, and environmentally-friendly cycle.

The length of the eight-year cycle was determined by considering a combination of the manufacturer's recommendations, research reports, wood pole type and size, climate and environment, and the practical requirements of the program. In general, the cycle is an industry standard, consistent

between utilities. Some U.S. states may treat initially at 10 to 16 years, but this is a function of differing wood types and climates, compared to British Columbia.

Changes in road grades or other damage to poles may occur, requiring applicators to go in and treat poles outside the eight-year cycle. Also, there may be infestations of ants and termites that occur off-cycle. These are often identified by homeowners or by line crews inspecting equipment.

Monitoring Methods and Data Collection

To decide whether wood poles need to stay in service, be replaced, or be stubbed (reinforced with a short supporting column at the groundline), the selected poles are inspected by certified inspectors using conventional visual, sounding, and boring techniques. The extent of external pockets and internal rot at or near to the groundline are quantified.

Above-Ground Inspection

Above-ground external inspection — This is a visual inspection of the above-ground portion of a pole or a pole reinforcement (stub). If obvious damage renders the pole unserviceable or unsafe, the pole must be recommended for replacement.

The inspector will identify and document the following defects:

Breaks/cracks — These are separations of wood fibres across the axis of a pole (lateral damage). A cracked pole must be recommended for replacement and reported immediately to the Test and Treat Field Manager.

Woodpecker damage — Generally, small woodpecker holes, particularly those that follow checks, do not significantly reduce the strength of a pole. A very large woodpecker hole (>7.5 cm diameter) or several smaller woodpecker holes at the same general location on a pole will weaken the pole significantly and may be an indication of insect infestation and/or unsound wood.

Fire damage — Fire damage on the lower body is normally caused by grass or bush fire and is usually only superficial. Signs of such fire damage will be reported.

Pole top rot — This is present where decay appears at the outer circumference of the pole top and/or indentations appear along the apex of the pole top.

Insect infestation — Insect infestation can be recognized by one or more signs, such as obvious insect activity, frass or sawdust, or holes on the surface of the wood.

Above-ground internal inspection — This is an internal inspection of the above-ground portion of a pole or stub to detect decay inside a pole. The inspector will identify and document defects as follows:

Sounding — Sounding will detect internal decay of a pole or stub. A hammer is used to strike the surface of the pole from the groundline to as high as can be reached. A sharp ring indicates sound wood, whereas a hollow sound or dull thud indicates hollow heart or decay.

Drilling — Drilling will determine the condition of the inner wood. While drilling, the inspector takes note of the following:

- The rate of penetration of the drill—a sudden collapse of the wood being drilled indicates decayed wood or hollow heart.
- Powdery wood particles indicate insect infestation or dried out decay.
- Discoloured wood particles such as severe darkening almost always indicate the early stages of internal decay. In the late stages of decay, the wood may become soft and spongy, stringy, or crumbly.

Probing — If rot is suspected after drilling, a hooked rod called a shell thickness indicator is inserted. The probing rod further defines the extent and location of decay in checks and pockets.

Below Ground Inspection

Below-ground inspection involves:

- partial or full excavation of the ground around the pole to expose the pole surface
- removal of external shell rot
- sounding the pole section below the groundline
- probing for internal rot using a drill

If unsafe, poles are not excavated—i.e., if the pole is rotted through at groundline or if it is not buried deep enough in the ground.

Where poles are set completely in concrete, they are inspected using the above-ground inspection procedures, not below-ground. If poles are set partially in concrete, the below-ground portions of the poles not covered by concrete are inspected,.

External below-ground inspection — The pole is excavated and the old bandage is removed. If shell rot is present, it is shaved off from the pole using a scraper, wire brush, hatchet, or spud (small shovel).

Internal below-ground inspection — Pockets and checks are probed and any decay is removed. If there is no visible decay, but internal decay is suspected, drilling is done to confirm. If the effective circumference is equal or greater than the required circumference, drilling at the bottom of the excavation is done to check for decay further down the pole.

Stubbed Pole Inspection

On poles with wood stubs there are two sets of fasteners (bands)— one located near the top of the stub and a second located near the groundline. Sometimes, after installation, the lower set of bands is buried due to road grade changes. When buried, decay around the bands is prone to develop. Where possible, the earth covering the buried bands is removed. Loose or damaged bands are noted on the report form.

Injury Thresholds: Section 58(2)(d)

58 (2) A pest management plan prepared for the purpose of section 7(1)(a) of the Act must include the following integrated pest management elements:

(d) a description of the injury thresholds that will be applied in deciding whether a pesticide treatment is necessary and an explanation of

(i) how the thresholds were chosen, and

(ii) how the thresholds will be applied;

Injury thresholds are identified and applied as part of the monitoring and inspection program. Poles are tested for serviceability every eight years and either treated on the spot or recommended for replacement. See the decision-making flowchart on page 28.

Before making recommendations on whether to treat, stub (reinforce), or replace wood poles—the serviceability of the pole must be properly evaluated. The strength of a pole is related to its physical properties – the larger the diameter and shell thickness, the stronger the pole.

The decision to carry out treatment on the spot, or recommend stubbing or replacement, depends on the circumference and strength of the pole, the pole loading (equipment on the pole), and the presence of any rot or damage.

Annually, about 3% to 4% of inspected poles are identified for replacement due to insufficient shell thickness or extensive shell rot. Another 3% of inspected poles are recommended for groundline reinforcement (stubbing)

due to the presence of moderate decay at or below the groundline. Various pole top refurbishment techniques are also used to restore deteriorated poles.

Pole Treatment Criteria

These are the injury thresholds for application of wood preservatives:

- The presence of insects in the wood, which would require immediate treatment.
- External treatment at the eight year treatment cycle, if necessary. If there is no shell rot, no bandage is applied. If shell rot is present, a bandage is applied. If a bandage is already there, the monitoring crew will continue to bandage.
- Internal treatment at the eight-year treatment cycle, unless the pole is inside a no-treatment zone or other sensitive area.

Stubbing Criteria

Wood poles are recommended for stubbing when the:

- effective shell thickness below ground is less than the required value
- effective circumference at the groundline zone is less than the required value
- below groundline area of a pole is weakened beyond acceptable strength limits (causes of such weakening are biological decay and/or mechanical damage)

The above-ground portion of the pole must be in good condition and meet the strength requirements.

Pole Replacement Criteria

Poles are generally replaced as a result of pole maintenance inspections, or when other parts of the structure are replaced due to age, including cross-arm timbers, insulators, and wires. Poles will only be replaced when necessary, to reduce costs and support environmental objectives. Whenever possible, poles will be stubbed.

Poles are recommended for replacement when:

- the strength of the pole is inadequate
- extensive physical damage above ground is evident
- the effective shell thickness above ground is less than the required value
- on a stubbed pole, internal decay is evident at the band or bolt locations

- the pole is unsafe to climb
- the pole is relocated
- a customer requests and pays for a relocation

Evaluating Effectiveness: Section 58(2)(f)

58 (2)(f) a description of the monitoring program that will be employed for evaluating the effectiveness of the pesticide use on pest populations and the environment, including effects on organisms other than targeted pests, by comparison with the information collected under the program described in paragraph (c), which program must include a description of

(i) the monitoring methods,

(ii) the frequency of monitoring, and

(iii) the data that will be collected.

Contract Inspections

Contract work is inspected to ensure it is completed according to specifications and the PMP.

There are two forms of inspection. First, a review is completed of the quality of the applicators' work on a sample of the total number of poles. Second, a safety, social, and environmental inspection is completed, and any issues noted are brought to the attention of the contractor immediately, such as no-treatment zones around domestic wells and water intakes.

Annual Inspections

BC Hydro carries out annual public safety inspections on the entire distribution system. Every pole in the province is visually inspected to identify any obvious defects and record those that may need remedial treatment.

Annual Review

The results of the Wood Pole Test & Treat program are reviewed on an annual basis using the data collected in the Pole Renewal Tracking Database. Pole failure information is entered into the database (to be replaced with the Maintenance Design Tracking System in 2009). The database tracks annual replacements and budgets are prepared based on the failure rate.

This annual review ensures that poles are being treated at appropriate intervals. The corporation is currently in a steady state—that is, the predicted failure rate closely matches the actual failure rate. This indicates the eight-year monitoring cycle is accurate and optimal.

Research

BC Hydro's research division, Powertech Labs, performs life cycle analyses, as well as evaluates products, equipment, and techniques, and their effects on wood poles and the environment. This continual research ensures that the products and procedures the corporation uses are always the most effective, well-timed, environmentally-friendly, and cost-effective.

Treatment Methods: Section 58(2)(e)

> ***58 (2) A pest management plan prepared for the purpose of section 7(1)(a) of the Act must include the following integrated pest management elements:***
>
> ***(e) pest treatment options including***
>
> ***(i) a description of the pesticide and non-pesticide treatment methods of controlling pests that may be used,***
>
> ***(ii) the rationale for selecting the treatment methods described under subparagraph (i),***
>
> ***(iii) the benefits and limitations of each treatment method described under subparagraph (i), and***
>
> ***(iv) a description of how a decision to use treatment methods will be made;***

Three wood pole treatments are used by the corporation:

- replacing wood pole
- stubbing wood poles
- chemical treatments (internal and external)

See the *Decision-making Flowchart* on page 28 for how treatment methods are chosen. Treatment is carried out under the monitoring program.

Treatment Rationales

All poles are treated with preservatives every eight years unless there is an environmental restriction. The length of the eight-year cycle was determined based on the manufacturer's recommendations, research reports, wood pole type and size, climate and environment, and the practical requirements of the Wood Pole Test & Treat Program.

There are many benefits to treating poles rather than replacing them:

- lower cost (see Table 1 below)
- extended pole life

- fewer service outages
- enhanced public and worker safety
- less environmentally damaging
- conservation of trees
- reduced landfill waste
- increased carbon credits
- reduced transport costs

Further rationale for deciding on treatment methods is described under *Injury Thresholds* on page 17.

Table 1: Cost of Treatment vs Non-Treatment

The cost of *not* treating wood poles is significantly greater than the cost of treating them.

	No Treatment	With Treatment
Total Number of Wood Poles	100,000	100,000
Average Service Life	30 years	60 years
Annual Replacements	1,000	500
Replacement and Disposal: Cost per Pole	$8,500	$8,500
Annual Cost of Ownership	$ 8,500,000	$4,250,000
Inspection and Remedial Treatment Cost per Year *	----------	$ 400,000
Total Annual Cost	$ 8,500,000	$ 4,650,000
Annual Net Savings		$ 3,850,000
Cost		$400,000
Benefit		$ 3,850,000
Cost/Benefit Ratio		9.7 **:** 1

* Historical Test & Treat average program cost ($400,000 for 2004)

Pole Replacement

Description

Pole replacement means the removal of an old pole due to damage or rot, and replacement with a new, pretreated wood pole. A decision to replace the pole is made when treatment will no longer be adequate to maintain the pole safely.

Benefits and Limitations

Poles are treated as long as possible before replacement for many reasons (see *Treatment Rationales* on page 20).

Also, with pole replacement, holes must be dug, which means greater soil and environmental disturbance, more use of resources, service interruptions, and greater safety risks to workers and the public caused by pole changeout. Therefore, treatment with preservatives means fewer safety hazards to the public and workers.

An ancillary benefit of replacing a pole is that it may allow a new pole to be placed into a better location, for example, a spot with easier access, fewer environmental issues, or lower traffic for enhanced public safety.

Stubbing Wood Poles

Description

The corporation prolongs the service life of poles by "stubbing" them. Stubbing is the reinforcement of the groundline area of a wood pole that has decayed below ground. A relatively short reinforcing column, or stub, is fastened next to the pole as a support.

The current standard is to use steel stubs. In rare specialized cases, wood stubs are used.

Benefits and Limitations of Stubbing

- Stubbing allows a delay in replacing the pole for several more years (15–25 years), thereby saving money and trees.
- Stubbing is an alternative to, and is cheaper than, pole replacement. Typically, replacing a pole is several times more expensive than stubbing.
- Tthere is less soil and environmental disturbance than pole replacement.
- Stubbing involves no adverse effects on fish, wildlife, or the environment.
- Stubbing poses no hazards to the public, but can pose a hazard to workers. For example, equipment may fall off the pole, digging may contact underground gas lines, or accidents can happen with the use of power tools.

Wood Preservatives: Section 58(3)(c)

58 (3) A pest management plan prepared for the purpose of section 7(1)(a) of the Act must include the following operational information:

(c) identification of each pesticide that will be used under the plan, the manner of its application and the type of equipment required for each manner of application.

Only wood preservatives approved by the corporation and listed in this PMP are eligible for use for wood preservation under this PMP. (Definitions of the preservatives follow Table 2.)

See *Treatment Rationales* on page 20 for a list of the many benefits of treating wood poles rather than replacing them.

Table 2: Wood Preservatives Used for Wood Pole PMP

Manner of Application	Active Ingredient	Equipment Required
External treatment: paste	Copper naphthenate and sodium fluoride	Bandage, stapler, shovel, scraper
	Copper naphthenate	
	Copper naphthenate and borax	
External treatment: brushing grade	Copper naphthenate	Brush
	Zinc naphthenate	Brush
Internal treatment: liquid	Metam (sodium anhydrous)	Drill, hand pump sprayer, plug
	Disodium octaborate tetrahydrate	
Internal treatment: powder or foam	Disodium octaborate tetrahydrate	Powder: Drill, puffer, plug Foam: Drill, compressor unit
Internal treatment: solid	Anhydrous disodium octaborate	**Drill**, **hammer**
	Anhydrous disodium octaborate, copper, boric acid	

As per Section 79(1) of the *Integrated Pest Management Act*:

External liquid formulation — a liquid preservative that is applied to the exterior of wood.

Groundline bandage treatment formulation — a preservative in a paste form that is applied to the exterior of wood and then wrapped with a covering.

Liquid internal preservative — a liquid preservative that is applied to wood by low pressure through a hole drilled into the core of the wood.

Solid internal preservative (not in 79(1)) — a preservative that is inserted into the wood in a solid form.

External Treatments

Bandages – Description

Most external treatments consist of bandages covered with the wood preservatives *copper naphthenate* combined with *sodium fluoride* or *borax.* The bandage is placed against the outer edge of a pole just below the groundline, and stapled carefully to the pole. Soil is back-filled against the pole to help hold the bandage in place.

Two types of bandages are currently used by the corporation—pre-made bandages and site-made bandages.

Site-Made Bandages — For site-made bandages, the bandage material is plastic-backed kraft paper. A thin layer of an oil-based wood preservative paste is applied to a measured portion of kraft paper with a trowel, to the manufacturer's recommended thickness. (Some contractors use a bandage maker device.)

Site-made bandages contain a combination of *copper naphthenate* and *sodium fluoride*, or *copper naphthenate* with *borax*.

Pre-made Bandages — Pre-made bandages incorporate a liquid gel-type preservative containing *copper naphthenate* into a quilted absorbent material, sandwiched between plastic. Until the bandage is cut and placed on the pole, the preservative is essentially encapsulated.

Rationale for Bandages

Poles are only bandaged if external shell rot is already present. The treatment is designed to act as an external barrier to prevent fungi from penetrating the wood, or to prevent the exterior pole surface from decaying further.

Benefits and Limitations of Bandages

- The bandage is effective at arresting below-ground decay on the surface of the pole and/or preventing entry of fungi and insects into the pole.
- Copper naphthenate has limited penetration and stays close to the wood surface. Unlike internal treatments, it only travels a short distance in the sapwood region of the pole, about 10–50mm.
- Copper naphthenate is oil soluble and resistant to leaching by rainfall.
- Sodium fluoride in bandages dissolves with moisture and migrates into the wood, providing enhanced protection to the wood away from the surface.
- Over time, treatments lose their effectiveness.
- Pre-made bandages leave plastic that doesn't biodegrade.
- Site-made bandages are cheaper than pre-made bandages.
- There is a greater potential for workers to get product on them when making bandages onsite, or to drop the product on the ground.

Internal Liquid Treatments

Treatment Rationale

All inspected poles receive internal treatment whether there are signs of internal decay or not, because drill holes made during inspections act as potential early entry points for decay. Therefore, it is important to treat poles before decay begins, as an effective preventive measure. However, if the pole is located within a NTZ, the pole will only be tested, not treated.

Description

Applicators drill a number of holes in the pole above and below the groundrline. Using a low volume pressurized sprayer wand attached to a canister, the holes are filled with wood preservative. The holes are sealed with plastic plugs.

Metam Sodium — Liquid formulations using the fumigant *metam sodium* are used for the internal protection of wood poles against fungal and insect attack. After the holes are sealed with plastic plugs and in the presence of moisture, the liquid fumigant turns into a gas—*methyl isothiocyanate* (MITC), the active fungicidal ingredient. Almost immediately, it rapidly dissipates through the wood.

Disodium Octaborate Tetrahydrate — Liquid insecticide solutions containing *disodium octaborate tetrahydrate* are used internally as a fumigant

to control wood-destroying insects such as subterranean and dampwood termites, carpenter ants, powderpost beetles, as well as decay fungi.

The chemical is diluted with water or made up as a foam and injected into drilled holes in wood poles in or near the insect colony or fungi. The product penetrates into the wood to various depths, depending on the moisture in the wood and the wood species. The reservoir of liquid preservative stays intact until moisture in the pole exceeds 30%, then the boric acid diffuses through the pole to the areas with the highest moisture contents, i.e., the areas most likely to be attacked by fungi or insects.

Boric acid — This is a low-toxicity mineral applied in the form of borax or boron-containing salts. Boric acid is used when fumigant cannot be used for environmental reasons. It is effective against fungi and insects such as carpenter ants, disrupting their digestive system.

Benefits and Limitations

- The fumigant moves vertically above and below the application point (with a small amount of lateral movement), which makes the treatment very effective against internal decay.
- The treatment is contained within the poles, so there is no effect on people or the environment.
- The treatment lasts a long time because the chemicals are trapped inside the woodpole and cannot escape.
- The preservatives generally only become active when the moisture content of the wood is also enough (30%) to breed fungi.
- Internal preservatives are more cost-effective than solid preservatives.
- Special handling and application techniques are required.
- The preservatives have adverse effects on aquatic life.
- The preservatives are not as effective below ground because the moisture content is too high.
- Drill bits are used repeatedly without being sterilized, and could possibly carry pest organisms from pole to pole.

Internal Solid Rod Treatments

Description

Internal solid treatments consist of inserting a preservative in the form of solid rods or powder into the wood pole.

Rods are most commonly used and are placed only in sound wood. The preservatives used are:

- solid boron rods containing *anhydrous disodium octaborate*
- solid copper rods containing *anhydrous disodium octaborate*, copper, and boric acid in combination

Applicators drill holes in the pole above and below the groundline, insert the rods into the holes, and seal the holes with plastic dowels.

Solid powder treatments are applied by injecting powder inside the pole using a puffer device.

Treatment Rationale

Internal solid treatments help prevent fungal growth and insect damage.

Both types of solid rods react with moisture to form boric acid. The rods stay intact until moisture in the pole exceeds 30%, then the chemical diffuses through the pole to the areas with the highest moisture content, i.e., the areas most likely to be attacked by fungi or insects.

Benefits and Limitations of Internal Rod Treatment

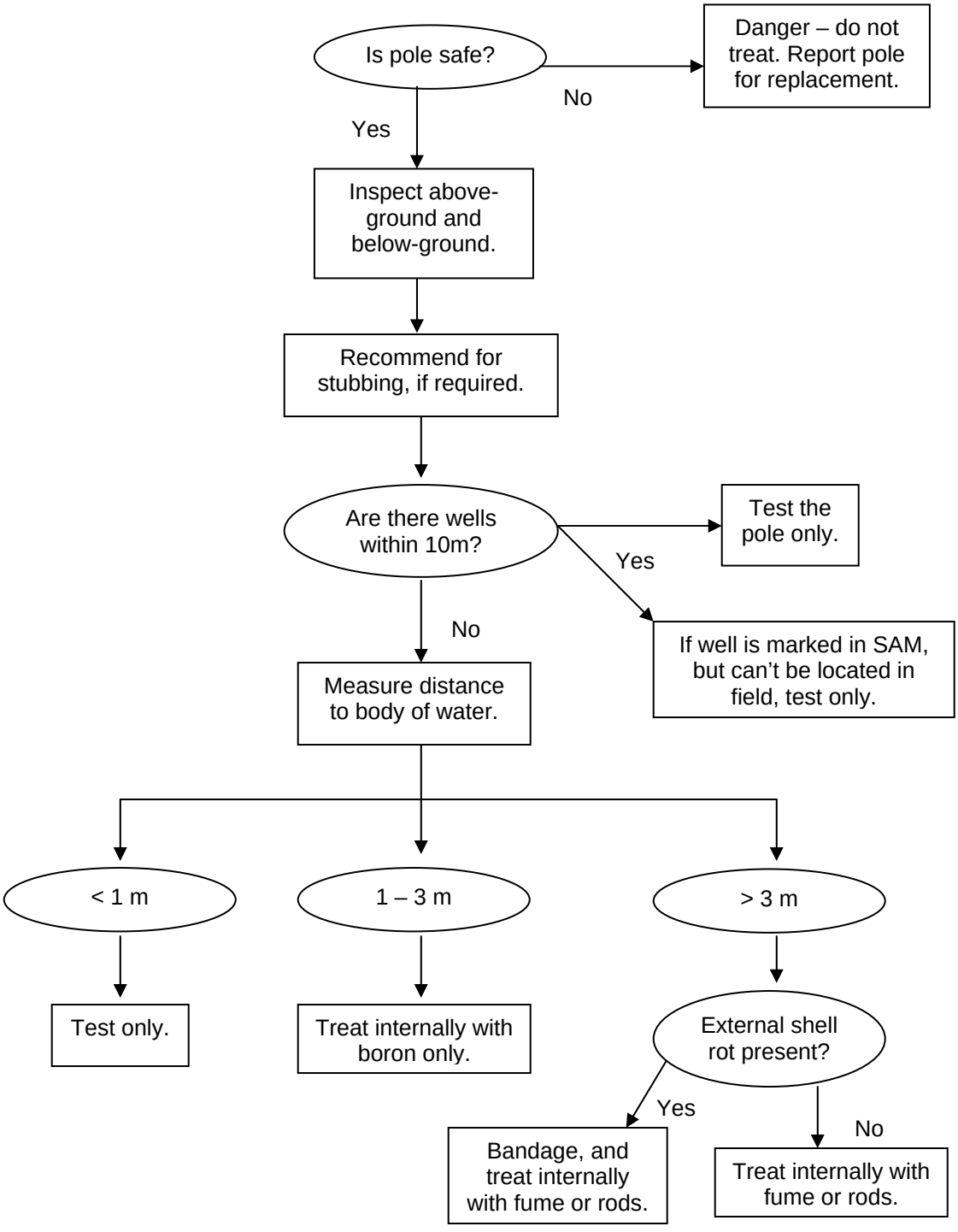
- Boric acid is virtually benign to aquatic life; therefore, the rods are used to prevent internal decay in poles located near riparian areas.
- Rods are about 33% more expensive than wood fumigant.
- Rods pose less health risk to workers compared to fumigant.
- Boron is used when fumigant cannot be used for environmental reasons.
- Boron rods are an extremely low-risk pesticide and have been classified as exempted pesticides. This makes them easier to use because there are no legislated storage or transportation requirements.
- Boron application is easier than fumigant.
- There is no opportunity for spills.

Backfill, Clean-up, and Report

After inspection or treatment, the applicator backfills and firmly tamps the excavated hole around the pole, taking care not to backfill loose articles, turf, garbage, or broken asphalt. Bandages are protected from damage with a shovel during the backfill.

Finally, the applicator cleans up the site and removes any broken pavement and debris.

Decision-Making Flowchart



Handling of Wood Preservatives: Section 58(3)(a)

58 (3) A pest management plan prepared for the purpose of section 7 (1) (a) of the Act must include the following operational information:

(a) a description of the methods of handling, preparing, mixing, applying and otherwise using pesticides that will be employed under the plan including a description of the following procedures:

(i) procedures for safely transporting pesticides;

(ii) procedures for safely storing pesticides;

(iii) procedures for safely mixing, loading and applying pesticides;

(iv) procedures for the safe disposal of empty pesticide containers and unused pesticides;

(v) procedures for responding to pesticide spills;

Responsibilities of Personnel

To apply wood preservatives, personnel must be working under a firm with a current service license. Applications will be performed or supervised by a Certified applicator as per the *Integrated Pest Management Regulation* (Section 46). The Certified applicator must:

- be in continuous attendance at the site while wood preservatives are being applied
- have proof of certification on hand
- supervise no more than four uncertified assistants at one time
- maintain continuous contact, auditory and/or visual, with the uncertified assistants
- be within 500m of persons being supervised
- have a detailed map or diagram showing the proposed treatment areas and pesticide-free zones (Section 42(1) of the Regulation)
- comply with requirements set out in Division 7 of the Regulation, *Records and Reporting Requirements*

Certified applicators must also:

- Inform personnel under their supervision of boundaries of the proposed treatment area, personal protection requirements, and procedures required to protect human health and the environment.

- Ensure that application equipment is in good working order.

- Inspect the treatment area to ensure that regulatory requirements and standards can be met.
- Ensure that their crews have current *Material Safety Data Sheets* for the products they are using, and that all personnel read and follow product labels.

Handling and Preparation

Wood preservatives will be kept, handled, stored, and transported in the container in which they were originally packaged and with the label originally affixed by the manufacturer, or in an appropriately designed and labeled container.

Personnel will follow the IPM Regulation, Section 71(1), ensuring that:

- Each individual who will be using chemicals is informed of the boundaries of the proposed treatment area, the requirements for personal protection, and the procedures required to protect human heath and the environment.
- The application equipment is in good working order. (Note: no calibration of equipment is required to apply wood preservatives.)
- An inspection of the treatment area is carried out to ensure that the applicable regulatory requirements and standards can be met in carrying out the use.

Note: Mixing and loading procedures do not apply to wood preservatives. The preparation of wood preservatives for application techniques is described on page 23 of this PMP.

Transportation

As per Section 33(2) of the *Integrated Pest Management Act*, personnel will ensure that wood preservatives are carefully transported in order to:

- prevent escape, discharge, or unauthorized removal of the chemicals from the transport vehicle
- prevent contamination of food or drink intended for human or animal consumption
- prevent contamination of household items such as furnishings, clothes, toiletries, or bedding

Personnel will follow all applicable transport requirements set out in the *Transport of Dangerous Goods Act*, as well as IPM Regulation requirements in Sections 33(2) and 65.

Storage

Personnel will store wood preservatives in a storage facility according to the requirements of Section 66(1)(b) of the IPM Regulation:

- separated from (and not used for storage of) food intended for human or animal consumption
- ventilated so that pesticide vapours are vented outside
- locked when unattended
- accessible only to persons authorized by the person storing the pesticide

Each door providing access to a pesticide storage facility will have a sign that is clearly visible to a person approaching, with these words in block letters: "WARNING: CHEMICAL STORAGE – AUTHORIZED PERSONS ONLY". Fumigants and other pesticides that release vapours and bear a "poison" symbol on the label will be stored in a facility that is not attached to or within a building used for living accommodations.

Within 60 days after starting to store pesticides at a location, personnel will provide notice of the storage location to the fire department responsible for fire protection at that location.

Application

In general, personnel will follow these instructions when applying wood preservatives:

- Hold a pre-job meeting at the site to advise the following:
  - intended work schedule
  - work plan for the site
  - types of wood preservatives being used
  - intended length of time to be on site
  - environmental issues
- Ensure that persons handling wood preservatives are certified applicators, and will use proper protective equipment and clothing.
- Ensure that emergency wash facilities, first aid equipment, spill kits, and emergency phone numbers are close at hand.
- Do not wash or submerge in a body of water any container used to prepare or apply wood preservatives.
- Complete Daily Operations Records, and closely follow all specifications.
- Follow directions and restrictions on product labels and Material Safety Data Sheets for all wood preservatives. Also, a copy of this PMP must be carried at all times.

- Do not apply preservatives if water fills the excavation during below-ground treatments.
- Do not apply any wood preservatives within a pesticide-free zone or no-treatment zone.
- If possible, do not apply preservatives when temperatures are >30^{o}C (however, most applications are not exposed to the elements because treatments are usually internal or below ground).

Disposal

Personnel will follow these instructions to dispose of wood preservatives:

- Damaged metam sodium containers are handled as outlined in the *Environmental Management Act* and its *Hazardous Waste Regulation,* Section 42.
- Non-pressurized containers are triple-rinsed. Pressurized containers do not require rinsing.

Spill Response Plan

If a spill of wood preservatives occurs, personnel will follow these instructions:

1. Ensure the safety of workers and public by limiting access to the area, protecting people from exposure, and ensuring wash facilities are nearby.
2. Put on protective equipment before cleaning up the spill, including protective clothing, respirators, and eye protection.
3. Contain the spill.
4. Report spills of over 1kg to the Provincial Emergency Program (PEP) as per the *Spill Reporting Regulation*.
5. Clean up the site.

Environmental Protections: Section 58(3)(b)

58 (3) A pest management plan prepared for the purpose of section 7 (1)(a) of the Act must include the following operational information:

(b) a description of the environmental protection strategies and procedures that will be followed under the plan, including a description of the following strategies and procedures:

(i) strategies to protect community watersheds and other domestic and agricultural water sources from adverse effects of pesticide use;

(ii) strategies to protect fish and wildlife, riparian areas and wildlife habitat from adverse effects of pesticide use;

(iii) strategies to prevent pesticide contamination of food intended for human consumption;

(iv) pre-treatment inspection procedures for identifying treatment area boundaries;

(v) procedures for maintaining and calibrating pesticide application equipment;

(vi) procedures for monitoring weather conditions and strategies for modifying pesticide application methods for different weather conditions;

There is no need to monitor or record the weather for the Wood Pole Test & Treat Program because treatments are done below ground or restricted to within the wood pole itself.

There is no application equipment to calibrate or keep records of. Rods come pre-made and are inserted into drilled holes. Bandages are pre-made, and those made on site are covered with a standard amount of preservative. For internal treatments, liquid is poured in until the hole is filled.

Also, since the treatment area is the pole itself, not a land area, there is no pre-treatment inspection for identifying treatment area boundaries. However, NTZs are maintained around bodies of water and wells.

Environmental Protection Strategies

To ensure that treatments are done in an environmentally sound manner, personnel will:

- complete thorough pre-job meetings with all certified applicators
- review and sign completed *Pre-Job and Inspection Guideline* checklists

- ensure that no-treatment zones (NTZ) are adhered to
- hold an annual workshop to ensure that all test-and-treat contractors are informed of environmental issues and strategies

Poles are treated by certified applicators to minimize the risk of misapplication, over-application, or spillage. All applicators carry spill kits with them.

Techniques have been developed to ensure that the product is placed carefully inside the pole (with holes sealed after insertion) or sealed securely against the pole below the groundline. Because of this placement, the public or wildlife will not come into contact with the wood preservatives, and the risk of wood preservatives leaching into the soil or air is virtually eliminated. Wood preservatives also bind to the wood, further reducing the risk of leaching.

Treatment in Sensitive Areas

Sensitive areas may include areas with large numbers of domestic animals (such as corrals), and areas adjacent to parks, schools, and daycare centres, including anywhere within the boundaries of the facility, and poles located on the same side of the street as the facility.

To reduce exposure from wood preservatives within these sensitive areas, workers may install a pole bandage seal in the form of a thin piece of enamel-coated aluminum sheet to cover the top portion of the preservative bandage. The seal is secured to the pole with aluminum or galvanized nails.

Aesthetics

Every effort will be made to ensure lawns, flowerbeds, and landscaped areas are not damaged and left in the same condition as they were found. Once pole treatment is finished, little or no sign will be left indicating that workers were there. To accomplish this, excavated soil may be placed on tarps or sacks to speed up backfilling and keep lawns soil-free. Sod is peeled back on lawns prior to excavation and replaced when work is completed. Where poles are set in concrete or blacktop, special tools are used as required.

Riparian Areas and Wildlife

No-Treatment Zones

The corporation ensures that wood preservatives will not be applied within established no-treatment zones (NTZ). According to the *Integrated Pest Management Regulation*:

> **No-treatment zone** means an area of land that must not be treated with pesticide.

To establish NTZs, the corporation measures the distance between the water source and the closest allowable point of application of wood preservative.

Table 3: Size of No-Treatment Zones

The *Integrated Pest Management Regulation*, Sections 79(1) and (2), require the following NTZs:

Product	**No-Treatment Zone ***					
	Fish Bearing Stream	Non-Fish Bearing Stream - Wet	Non-Fish Bearing Body of water – Dry (provided pole is greater than 10m from fish-bearing body of water)	Human Consumption Water Well (surface/drilled)	Non-human Consumption Water Well (surface/drilled)	Point of Diversion (water intakes)
Solid Internal Preservative	1 metre	0 metres (above water line)	0 metres (above and below groundline, not below high water mark)	10 metres	10 metres	5 metres upslope
Liquid Internal Preservative	3 metres	1 metre	0 metres (above and below groundline, not below high water mark)	10 metres	10 metres	10 metres upslope
External Brush-on Treatment	3 metres	1 metre	1 metre	10 metres	10 metres	10 metres upslope
Groundline Bandages	3 metres	1 metre	1 metre	10 metres	10 metres	10 metres upslope

*** Notes:**

- Liquid internal preservatives will only be applied to the portion of the pole that is permanently above the waterline.
- Solid internal preservatives can be used in locations that may be below the water table for portions of the year, provided they are not fish-bearing.
- In addition to NTZs for riparian areas, an 8m NTZ is maintained around certified organic farms, as per the Certified Organic Associations of British Columbia (Standard #3, Land and Resource Management).

Riparian Areas and Fish

The corporation ensures that groundwater and riparian issues are discussed with and understood by each applicator. Its personnel and contractors will adhere to the following mitigation measures:

- Workers will always use extreme caution when working around any body of water and not threaten the integrity of any body of water in the area. For example, workers will be instructed to keep a minimum of 15 metres away from the body of water when:

  - refilling dispensing equipment
  - fuelling equipment
  - cleaning equipment
  - preparing below-ground pole bandages

- During below ground inspections, if water fills the excavation, only solid rods will be used in above ground portion of pole, in compliance with the approved NTZs.

- Poles sitting in water are inspected and treated only if permitted by the designated NTZs (i.e., the water around the pole must not lead directly to fish habitat).

Watersheds, Wells, and Water Intakes

Many communities have designated watersheds where surface water is managed as the water source for the community. The Ministry of Environment defines a “community watershed” as a stream used for human consumption, where the stream is licensed as such by a community under the *Water Act,* and the drainage area is not more than 500 km^2.

In many BC communities, homeowners use private groundwater or surface water sources for domestic water, instead of a watershed. The corporation is restricted from applying wood preservatives within defined NTZs (as per Table 3) around wells and intakes.

Groundwater Identification

To identify locations of groundwater sources (watersheds, wells, and surface water intakes), and to ensure NTZs are respected during test-and-treat work, the corporation has developed a groundwater source identification process to ensure that applicators and the Field Manager locate sources of groundwater before any wood preservative is applied. In summary, the procedure involves:

- identifying all known groundwater sources in advance of treatment, using the best available information from the SAM database, the Ministry of Environment, and local governments
- indicating the groundwater sources on test-and-treat maps, which are provided to contractors
- physically searching a 10m area around the pole
- contacting the owner of the groundwater source if the source cannot be located in the field
- updating the groundwater source data in the database

Wildlife and Habitat

Woodpeckers and other cavity-nesting species tend to be attracted to wood poles, because they are similar to standing dead trees, which woodpeckers prefer because of the presence of insects and grubs. Also, when the birds

tap on poles, the electrical equipment produces echoing resonant frequencies, which woodpeckers exploit to attract mates.

The corporation's efforts are aimed at control of woodpecker damage (not control of woodpeckers themselves). This could involve restoring the strength of the pole, preventing further excavation by woodpeckers, tightening the equipment to reduce resonant frequencies, and preventing moisture from collecting in the cavity and increasing decay.

Woodpeckers do not come into contact with the preservatives, because they attack the top sections of wood poles, while remedial preservatives are located at the bottom, below the surface. This means that small mammals and ground-foraging birds are not adversely affected either. Birds very rarely nest in wood poles, but if an active nest is present, the wood pole will not be removed unless for safety or reliability reasons.

Since the tops of poles are not treated during the Wood Pole Test & Treat Program, wood poles with a bird's nest on top can be treated. When a wood pole with an osprey nest on top needs to be replaced, personnel will relocate the nest under the corporation's osprey nest relocation program.

Protection of Food

Research has shown that there is minimal to no leaching of wood preservatives into surrounding soil or water. Treatment is never undertaken in standing water, such as cranberry bogs.

In the vicinity of certified organic farms, it is the responsibility of the grower to maintain appropriate buffers between their organic crops and power poles. As recommended by the Certified Organic Associations of British Columbia (Standard #3, Land and Resource Management). buffer strips eight metres wide (containing a hedgerow or trap crop where feasible) must be located between the certified organic farm and the wood pole.

Other Wood Structures

The vast majority of wood preservative use is in the Wood Pole Test & Treat Program. The rest of wood preservative use is incidental, done on an ad hoc, as-required basis.

This section of the PMP fulfills the requirements of Section 58 of the *Integrated Pest Management Regulation* for other wood structures besides wood poles.

This section describes only the **program differences** between wood poles and other wood structures. If a subsection of Section 58 is not listed here, the required information is covered in the main *Program Description*. Also see that section for the Regulation text and general information.

Where the PMP Applies: Section 58(1)(a)

BC Hydro manages hundreds of facilities throughout the province. A BC Hydro facility is a well-defined site, owned or leased by BC Hydro. It usually consists of electrical structures and buildings, and typically has limited public access. Some facilities are non-electrical, such as poleyards, storage yards, and access roads.

Wood structures to be maintained consist of the following components:

Cross-arms and timbers — Conductors (wires) carrying the electricity from pole to pole are supported by insulators, which are attached to cross-arms. When two or more poles comprise a structure, they are usually connected to each other with one or more timbers to increase strength, stability, or both. Cross-arms and timbers are purchased pre-treated and not usually maintained with wood preservatives.

Pole and other storage racks — Poles are stored on racks (bunks) so they are kept out of contact with the ground and are easy to pick up. Other types of wooden racks exist for storing pipe, wire, etc. These racks are often made of wood and need to be protected from decay.

Types of facilities that may have wood structures include:

- electrical facilities — substations, switchyards, capacitor stations, and cable termination sites.
- transportation facilities — access roads, bridges, and helipads.
- administration and works facilities — office buildings, storage yards, and pole yards.

Duct bank/trench covers, walkways, ramps — In substations and other facilities, underground ducts house a variety of equipment including cables and conduit. Although many of these ducts are covered with concrete pads, some are still covered with wooden pads. A variety of wooden ramps are used at facilities, including equipment loading and wheelchair access ramps. These wooden structures need to be protected from decay.

Fence, sign and landscaping posts, timbers, ties, etc. — Many facilities are fenced, landscaped, or have signs on site. Many of the fence posts, landscaping timbers, and signposts are wooden. The wooden components need to be protected from decay.

Buildings — Wood preservation may be required for wooden components of buildings (however, this PMP does not cover the direct management of insects and rodents in buildings).

Wood staves — These are *not* covered under this PMP. The treatment of wood staves is a large, infrequently occurring project, and each wood stave has unique environmental concerns. Separate Pesticide Use Permits for the treatment of wood staves will be obtained on an as-needed basis.

Prevention Program: Section 58(2)(a)

Planning the construction and using a 'built to last' principle allows for wood structure designs that prevent organisms from becoming pests. The corporation's wood structures are built with quality wood from the start to extend the life of the structure. This includes the use of decay-resistant cedar and pressure-treated lumber.

During construction, pressure-treated lumber may be pre-treated with a wood preservative by brushing or dipping. This is the most common use of wood preservatives on wood structures. Painting the cut ends of treated wood at the time of construction can extend the service life of wood structures by 20%.

Wood destruction from fungi is also minimized by good building practices.

Identification of Pest Species: Section 58(2)(b)

Identification of potential problems at wood structures is done monthly during regular facility safety inspections.

Monitoring Program / Injury Thresholds: Section 58(2)(c)(d)

Monitoring of pest occurrence and damage, as well as environmental conditions, occurs annually during routine condition assessments.

The injury threshold is determined during safety inspections by qualified professionals. Injury thresholds for wood structures are related to engineering principles. The amount of sound wood remaining must be suitable to bear the load acting upon it, or it is considered unsafe. If wooden structures are built to engineered specifications, little rot is tolerated to maintain the structural integrity of wood.

Evaluating Effectiveness: Section 58(2)(f)

Evaluation of treatment efficacy on wood structures is undertaken during regular safety inspections.

Treatment Methods: Section 58(2)(e)

The use of wood preservatives at facilities is incidental and not part of the Wood Pole Test & Treat Program. Most treatment is done as and when required.

Description

Remedial treatment of wood structure surfaces uses applications of brushing grade wood preservatives containing *copper naphthenate* or *zinc naphthenate* (or internal application of boron rods where feasible). The chemical is applied as a paste using a brush.

Treatment Rationale

Some wooden structures at facilities typically use large timbers and are very expensive to replace; therefore, they warrant maintenance to further extend their service life. Although the corporation's "built-to-last" principle maximizes the service life of structures, follow-up treatments can extend it even further.

If treatment is required to reduce pests, a decision is made to either maintain the wood structure using wood preservatives, or replace the structure.

Wood preservatives will be applied by certified applicators, or under the direct supervision of a certified applicator in the structural wood category.

Benefits and Limitations

Follow-up treatment with wood preservatives can extend the life of wood structures by two to three times.

There is little or no danger to the public from the preserved wood because the corporation's facilities are generally off limits to the public, or are located in remote areas.