EPRI | ELECTRIC POWER RESEARCH INSTITUTE

Reusing Retired Utility Wood Poles

Answers to Your Frequently Asked Questions

Learn where and how you can reuse retired utility wood poles – and prudent precautions to take when handling and installing them.

Background

Approximately 160 million chemically-treated wooden utility poles are in service in the U.S. [1]. The poles are treated with one of the following preservatives:

- Pentachlorophenol (penta)
- Creosote
- Chromated copper arsenate (CCA)
- Ammoniacal copper zinc arsenate (ACZA)

These treated wood poles eventually deteriorate and must be replaced. Utilities annually remove from service more than 3 million wood poles in the US and Canada [2]. If these retired poles can be reused in a manner that is consistent with the originally intended purpose (i.e., wood material in contact with earth), then the U.S. and Canadian regulatory authorities do not consider them to be waste. But if they are not reused, disposal is required. Fortunately, wood poles retain considerable value after their use for electric power purposes. Some utilities give away or sell retired poles to the public, because reuse is more sustainable and less expensive than disposal.

Retired poles still contain chemical preservatives that potentially pose risks to humans and animals if the chemicals are ingested, inhaled, or absorbed through the skin at elevated concentrations.

EPRI developed this fact sheet for stakeholders that intend to reuse treated wood poles. It provides relevant information and answers to frequently asked questions about reuse of retired wood poles and the recipient's associated responsibilities.

Q: Why are wood poles treated with chemical preservatives?
A: Wood poles (including crossarms) are treated with chemical preservatives to protect them from fungal decay and a variety of wood-destroying pests, including insects

(such as termites and ants) and microorganisms [3]. This pest protection is important for the following reasons:

- If the poles are not treated, pests can compromise the structural integrity of the pole, ultimately resulting in pole failure.
- When poles break, people can be injured, and the pole and electrical equipment can damage or destroy property.
- Electric power can be disrupted in the vicinity.
- Protecting against decay and pest destruction extends the lives of poles, minimizing disruptions of electrical service and reducing demand for newly-harvested forest products.

Some utilities give away or sell retired poles to the public, because reuse is more sustainable and less expensive than disposal.

Q: What preservatives remain in the wood?

A: A creosote-treated pole retains some of the more than 300 chemicals that are present in pure creosote [4]. Retired pentachlorophenol-treated poles contain a small amount of the fuel oil carrier originally used to deliver penta into the cells of the wood pole. Various concentrations of the penta itself are present. If the pole was treated with CCA, all three chemicals are present at various concentrations. The same is true for ACZA-treated poles. Refer to the following manufacturer's safety data sheets for additional pertinent information concerning chemicals present and safety considerations:

- CCA Safety Data Sheet
- Creosote Safety Data Sheet
- Pentachlorophenol Safety Data Sheet

Q: What is this liability waiver that the utility wants me to sign before I receive the poles for reuse?

A: Most utilities ask pole reusers to sign a liability waiver. Most such waivers explain that retired poles pose some level of risk to humans, animals, and the surrounding environment, especially if the poles are used in an inappropriate manner. Most waivers also state that the new pole owner accepts all responsibility for damage or injury that the poles cause.

Q: What are examples of appropriate reuses for retired wood poles?

A: Appropriate reuses for retired wood poles include fence posts, fence railings, pole barns, ditch crossings, solar panel support structures, support structures for small windmills, light posts, parking bumpers, and earth retaining walls.

Some reusers use portable sawmills to saw the poles into lumber. Over time, sawdust that is impacted with chemical preservatives accumulates. Management and disposal of sawdust may require permitting and civil engineering work to ensure that storm water does not carry chemicals to offsite locations.

Q: What are examples of *inappropriate* reuses for retired wood poles?

A: Do not reuse treated wood in any application where direct contact between skin and wood, or between food and wood, is likely. Picnic tables and children's play equipment are examples of applications that are not appropriate for retired wood poles. Avoid reusing treated wood in applications in which horses or cattle may chew on the wood [4]. Do not reuse treated wood for furniture or any interior uses, as creosote- and penta-treated poles continue to off-gas throughout their life. The chemicals in CCA and ACZA are present in minute amounts in any wood sawdust or particles that are shed from the wood due to physical abrasion. Use only in well-ventilated locations.

Bridging ditches is an acceptable application, but do not use the poles to fill the ditch. Instead, lay them perpendicular to the ditch, and keep and install them out of the water and the mud.

Q: Why can't I burn retired treated wood?

A: Never burn retired poles indoors or outdoors. A typical recreational fire cannot be managed to control emissions and does not reach the high temperatures needed to ensure destruction of the chemicals in the wood. CCA-treated wood can generate toxic arsine gas. Combustion of penta-treated wood has the potential to generate dioxins. Burning creosote-treated wood produces strong odors, and not all of the hydrocarbon compounds are fully combusted.

Q: Can creosote cause skin burns?

Appropriate reuses for retired wood poles include fence posts and railings, pole barns, ditch crossings, light posts, parking bumpers, retaining walls, and more

A: Yes, if unprotected skin is exposed to pure creosote or creosote sawdust for long enough, it may cause a sunburn-like rash and intense burning sensation [5]. To avoid this, do not handle creosote-treated wood with bare hands. When cutting or drilling creosote-treated wood, wear long pants, a long-sleeved shirt, and a dust mask. Wash thoroughly after handling creosote-treated wood.

Q: Do wood poles cause cancer?

A: Some of the chemicals in wood preservatives are classified as known or probable carcinogens [6]. Laboratory and epidemiological studies indicate that incidental exposure to preservatives does not result in cancer.

Never burn retired poles indoors or outdoors.

Q: How can I manage the risks associated with retired poles?

A: When handling the wood (e.g., moving, stacking, etc.), wear work gloves to prevent direct contact with the skin, and wash hands thoroughly afterwards. When cutting or drilling a pole, always wear a dust mask and long sleeve shirt and pants. Wash thoroughly afterwards. These methods help ensure health and safety.

Use good judgement when storing the poles. Ideally, store them under cover to avoid contact with precipitation. This minimizes the possibility of rainfall migrating small amounts of preservatives onto the underlying ground.

Ensure that anyone aiding in the handling and reuse of retired poles understands all of these precautions and potential risks.

When handling wood poles, wear work gloves to prevent direct contact with the skin, and wash hands thoroughly afterwards.

References

1. National Public Radio, January 6, 2007, news interview with Brian Hayes, "What's Up with Those Utility Poles?"
2. EPRI, "Assessment of Treated Wood and Alternate Materials for Utility Distribution Poles," report 1019849, October 2010, Electric Power Research Institute. Palo Alto, CA.
3. "Toxicological Profile for Wood Creosote, Coal Tar Creosote, Coal Tar, Coal Tar Pitch, and Coal Tar Pitch Volatiles," U.S. Department of Health and Human Services, Public Health Service, Agency for Toxic Substances and Disease Registry, Division of Toxicology/Toxicology Information Branch, September 2002.
4. Jeannine Schweihofer and Chou, Karen, "Impacts of livestock chewing on treated wood," May 2011.
5. James Groenier and Stan Lebow, "Preservative-Treated Wood and Alternative Products in the Forest Service," U.S. Department of Agriculture, Forest Service, Technology and Development Program, April 2006.
6. Jan Dich, Sheila Zahm, Annika Hanberg, and H.O. Adami, "Pesticides and Cancer," Cancer Causes Control, May 1997, 8(3): 420-43.

3002014984 December 2018

Electric Power Research Institute
3420 Hillview Avenue, Palo Alto, California 94304-1338 • PO Box 10412, Palo Alto, California 94303-0813 USA
800.313.3774 • 650.855.2121 • askepri@epri.com • www.epri.com