

January 16, 2020

Department of Ecology  
Northwest Regional Office  
3190 – 160<sup>th</sup> Avenue SE  
Bellevue, WA 98008-5452

Attention: Jeanne Tran

RECEIVED  
JAN 16 2020  
DEPARTMENT OF ECOLOGY

Dear Jeanne,

As requested, Brooks Manufacturing has gathered supplemental information on the chemical 4,5-Dichloro-2-N-Octyl-4-Isouthiazolin-3-One ( $C_{11}H_{17}Cl_2NOS$ ) or 'DCOI' for the Department of Ecology. DCOI has a molecular weight of 281.041 g/mol and the CAS Number is 64359-81-5.

Brooks is expecting the manufacturer to offer DCOI in both solid and liquid-concentrate forms. Based on this expectation, we are anticipating being able to use the solid block form which would mean there would be no process changes from our previous Fact Sheet, section I.A. 'Industrial Processes', for our switchover from Penta. KMG, our Penta supplier, has notified us that they will cease operation at the end of 2021. At this time, our goal is to be able to switch from Penta to DCOI once inventory is depleted.

We have been looking for an accredited lab to perform the testing on our monthly samples. We have not had any success yet, but we are still looking. We also do not have an SDS for DCOI from the manufacturer yet, but we expect it to be available well before the end of 2021.

DCOI has been used for many years worldwide in wood preservation, marine antifouling, cooling tower algicide, and for mold/mildew control in paints and coatings. It is currently under Registration Review with the United States Department of EPA with the final decision scheduled to be issued September, 2020. The EPA's report on DCOI is called "DCOI Final Work Plan, Registration Review: Initial Docket Case Number 5023" EPA-HQ-OPP-2014-0403. This is a very in-depth report on the review

conducted by the EPA. I believe this will have most of the information you are looking for with regards to DCOI. I have also attached presentations from Viance and DuPont with additional information. If you should have any questions, please call.

Thank you,



Kevin Moseley

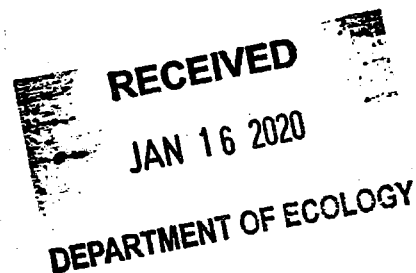
Technical Director

[kmoseley@brooksmfg.com](mailto:kmoseley@brooksmfg.com)

360-733-1700 ext. 332

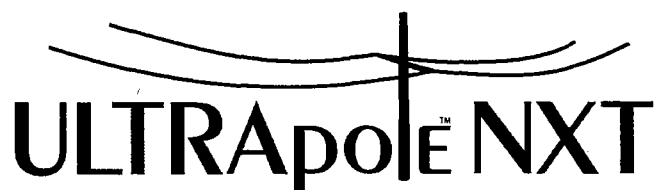
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PAGES 1-10  
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# UltraPole®NXT and UltraArm®NXT

Advanced DCOI Wood Preservative



*Treated Wood Solutions*

1

Our business brings together the wood biocides business of Dow-Dupont, and the wood preservatives and the pigment-based additive business of Venator Materials.



John Husa  
Dr. Kevin Archer  
Steve Furr  
Edie Kello  
Jonathan Moyes  
Brian Delbrueck  
Bob Baeppler

President  
Director of Research and Development  
Director of Engineering and Technical Services  
Director of Marketing  
CFO  
North American Sales Director  
Business Development Manager – Industrial Products



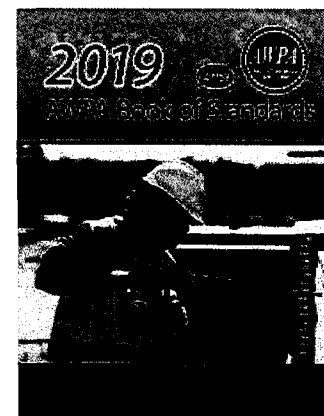
# ULTRApole<sup>™</sup> NXT

The UltraPole NXT wood preservative system offers the treater, utility, and consumer, a warranted, environmentally advanced and tested system for protecting the wood support structures that bring power to homes and businesses



# What is DCOI?

- It is an organic wood preservative
- It is a broad spectrum antimicrobial compound
- It is an AWPB standardized wood preservative listed as P-39 in the AWPB Book of Standards
- DCOI is the first new oil borne industrial wood preservative in decades.

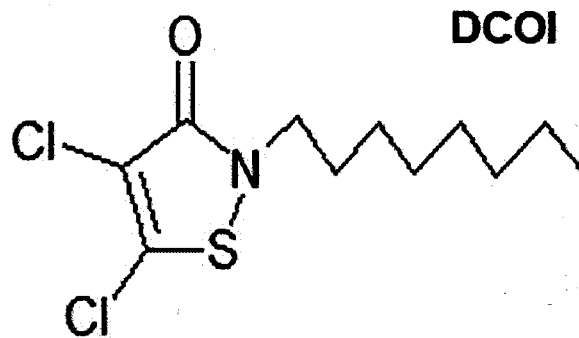


ULTRApole<sup>®</sup> NXT

ULTRAARMNX<sup>™</sup>

# DCOI-what is it?

- 4,5-Dichloro-2-n-Octyl-4-Isothiazolin-3-One
- CAS No 64359-81-5



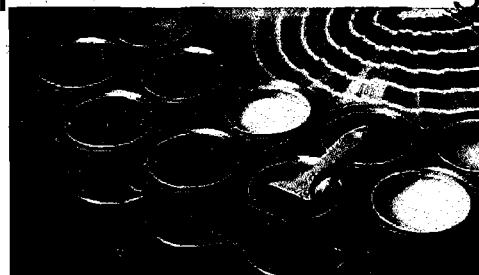
# Terminology

- UltraPole<sup>®</sup> NXT - poles treated with UP-23 wood preservative system and hydrocarbon solvent
- UltraArm<sup>®</sup> NXT - crossarms treated with UP-23 wood preservative system and hydrocarbon solvent
- UP-23 - the EPA registered wood preservative system containing 23% DCOI
- DCOI – the active ingredient in the UP-23 preservative system

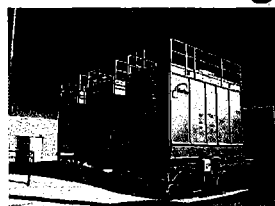
**ULTRAARMNXT**<sup>™</sup>**ULTRApoleNXT**<sup>™</sup>

# Effective

- DCOI is a moldicide used in paints and coatings



- DCOI is an algaecide used in cooling towers



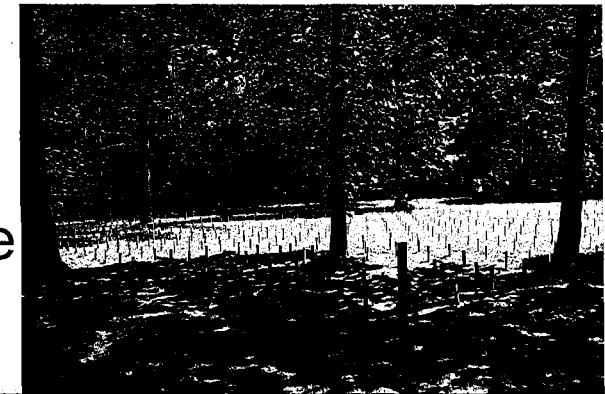
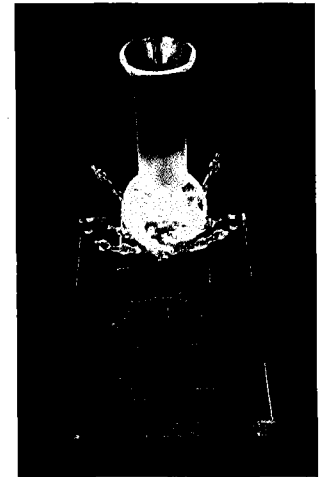
- In other things such as fish nets and drywall



# Effective

- DCOI is the active ingredient in marine antifouling formulations that won the 1996 US EPA Presidential Green Chemistry Challenge Award
- Decades of stake test data commissioned by Electric Power Research Institute (EPRI) and monitored by Mississippi State University (MSU) indicate it performs well in the challenging environments in sub-tropical plots in Dorman Lake MS and Saucier MS, proving its efficacy as a fungicide & insecticide

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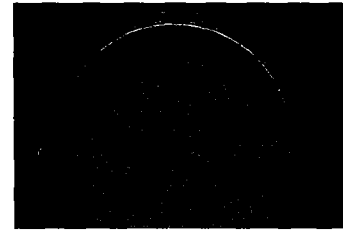


*Treated Wood Solutions*

8

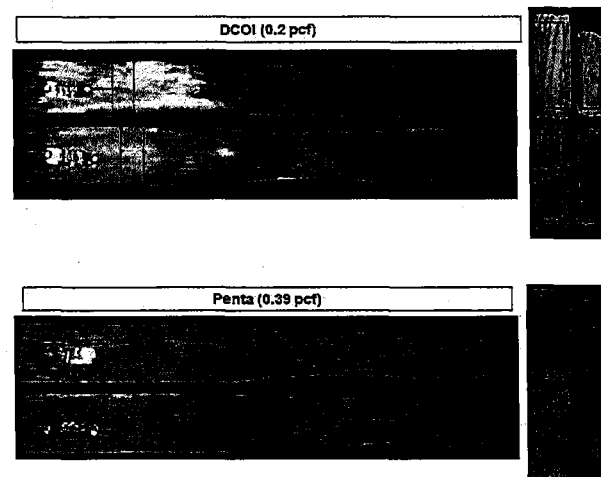
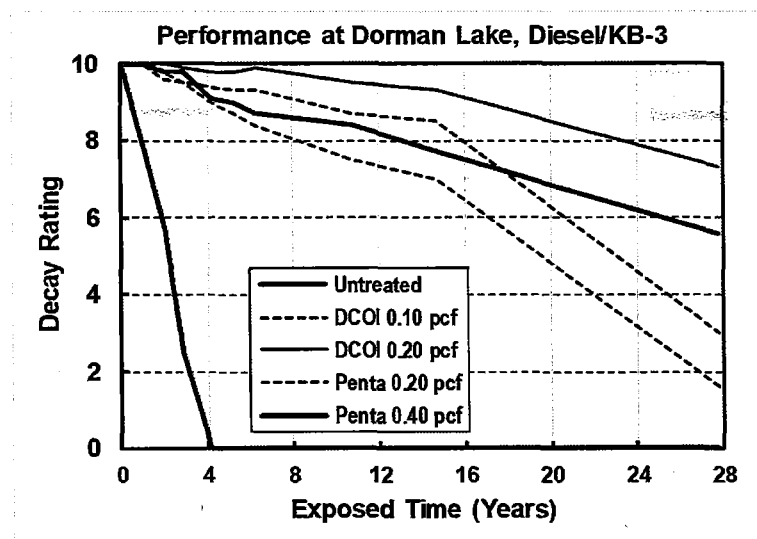
# UltraPole® NXT performance

- Laboratory and long term field testing has demonstrated that UltraPole NXT treated wood is highly effective against decay fungi and termites



- Minimum retention recommendations of 0.04 pcf for above ground and 0.08 pcf for ground contact were established by AWWPA in 1989
- 28 years of field stake test data from the study commissioned by EPRI
- This test data used by AWWPA to adopt the retentions for poles and cross arms are inherently conservative and provide a significant performance safety factor

# DCOI in Oil - E7 Stake Test Results



Appearance of 0.2pcf DCOI and 0.39 penta  
Treated stakes after 28 years exposure in  
Mississippi. Note severe attack of penta  
at twice the retention of DCOI



## How does DCOI compare to penta?

A DCOI UltraPole® NXT pole looks just like a penta treated pole

Both preservatives use similar if not identical oil solvents as a carrier

DCOI UltraPole NXT poles climb just like other oil-borne treated poles

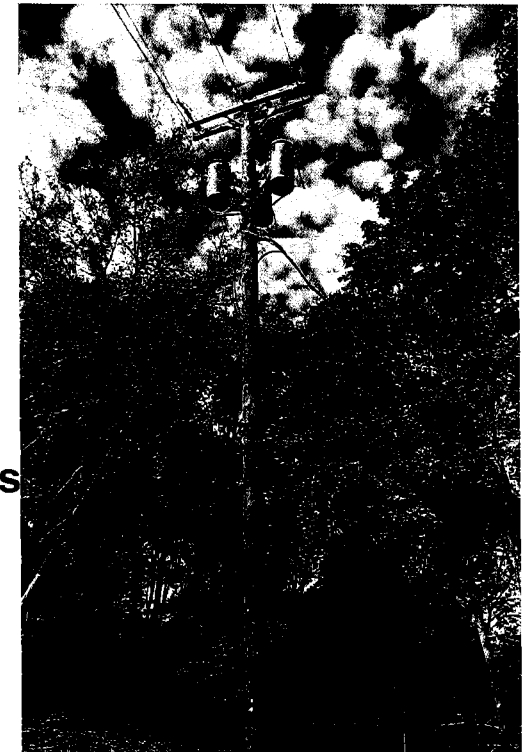
Conductivity, or more accurately, electrical resistance is comparable to penta poles

Hardware corrosion rate for UltraPole NXT poles is similar to penta poles

It is an effective wood preservative like penta – at 1/3 or less retention

All treated wood poles have a superior life cycle environmental profile than competing materials – DCOI is one step better

DCOI can be disposed of like other poles-landfills



# Environmental Impact

- DCOI is a metal free preservative (no zinc, copper, arsenic, chrome)
- Lower retention (1/3 of penta) equates to less chemicals overall in the environment
- The active ingredient, DCOI, used in UltraPole NXT poles is also used for residential treated wood – Ecolife® is the leading non-metal based residential treated wood used in backyard decks and other residential projects
- End of life use as a co-gen fuel offers an alternative to increasingly regulated and expensive land fill costs
- Pilot scale burn tests showed no hazardous compounds produced in co-gen conditions
- A description of material characterization of DCOI has been submitted to EPA for the approval of DCOI treated wood as a co-gen fuel
- Not a restricted use pesticide
- EPA classifies DCOI as a “general use pesticide”.
- “General use pesticides” have considerably fewer regulatory requirements affecting operations and reporting

The logo for UltraPole NXT features a stylized graphic of a pole with a curved line above it, resembling a wave or a protective shield. Below the graphic, the text "ULTRApole NXT" is written in a bold, sans-serif font.The logo for UltraArm NXT features a stylized graphic of a pole with a curved line above it, resembling a wave or a protective shield. Below the graphic, the text "ULTRAARM NXT" is written in a bold, sans-serif font.

# Environmental Impact

- DCOI has been approved for inclusion in Annex 1 to Directive 98/8/EC as an active substance for wood preservative use.
  - Annex I of the Biocidal Products Regulation (BPR) lists initially active substances identified as presenting a low risk under Regulation (EC) No 1907/2006 or Directive 98/8/EC, substances identified as food additives, pheromones and other substances **considered to have low toxicity**, such as weak acids, alcohols and vegetable oils used in cosmetics and food. Other active substances may be added provided that there is evidence that they do not give rise to concern.
- The Ecotoxicology of DCOI has been studied extensively under stringent European Organisation for Economic Co-operation and Development (OECD) protocols
- Risk assessment data is publicly available on the European Community website <https://echa.europa.eu>



# Environmental Impact- Soil

- DCOI is non-persistent in the soil, breaking down to simple compounds
  - Due to its biocidal nature, DCOI is not suitable for biodegradation testing under standard protocols
  - OECD 303A simulation studies have shown however that dissipation half life in soil is very short - 4.7 days
  - Metabolism of DCOI involves cleavage of the isothiazolone ring and subsequent oxidation
  - Cleavage of the isothiazolone ring results in metabolites that are significantly less toxic than DCOI (2-5 x less)
  - The major breakdown products formed are
    - N-(n-octyl) malonamic acid (NNOMA)
    - N-(n-octyl)acetamide (NNOA)
    - N-(n-octyl) oxamic acid (NNOOA)
    - 2-chloro-2-(n-octyl carbamoyl)-1-ethene sulfonic acid
  - Both NNOMA, NNOA are readily biodegradable. In addition structural activity relationship (SAR) assessment predicts NNOOA and the sulfonic acid breakdown product will also be quickly biodegraded.
  - As a result the risk assessment for DCOI includes risk assessment of its metabolites.
  - No evidence could be found in the literature that any release of the breakdown products from DCOI is reportable to state or federal authorities.
- Toxicity to *Eisenia fetida* (earthworms) is reported as being 250 mg/kg (as product)



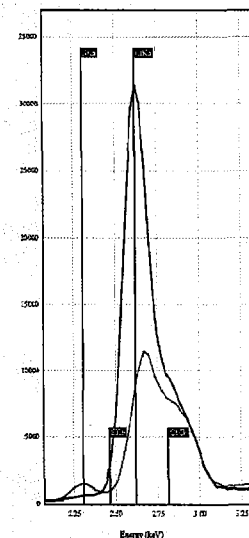
# Environmental Impact-Water



- DCOI has low water solubility of  $\leq 5$ ppm
- Once introduced into an aquatic environment, DCOI will partition into sediment, where it will be rapidly degraded to readily biodegradable substances. DCOI is unlikely to persist in the environment. It will be removed from waste water by wastewater-treatment facilities.
- Dissipation half life is reported to be 16.5 hours in surface water and 0.17 days in sediment
- No literature could be found to indicate that DCOI or its breakdown products have any reportable quantities in runoff water
- DCOI has a mean Koc of 6610 L/Kg - Soil Absorption Coefficient
  - A very high value means it is strongly adsorbed onto soil and organic matter and does not move throughout the soil.
- DCOI has a DT50 of 4.7 days in soil. As a result ground water contamination is not considered likely.

## DCOI in Oil - End of Life Disposal

- Controlled laboratory combustion studies have shown that no harmful products such as polychlorinated dibenzo p-dioxins, p-furans or polychlorinated biphenyls are formed when DCOI treated wood is burned under normal co-gen operating conditions
- Based on that data end-of life disposal of Ultrapole NXT poles through co-gen facilities may be possible and is likely
- EPA approval to burn treated wood as non hazardous secondary waste in co-gen facilities is a complex and time consuming process. We are currently working with a consultant familiar with EPA's RCRA Division - Office of Solid Waste to expedite the necessary approvals



# Utility - UltraPoleNXT Value Proposition

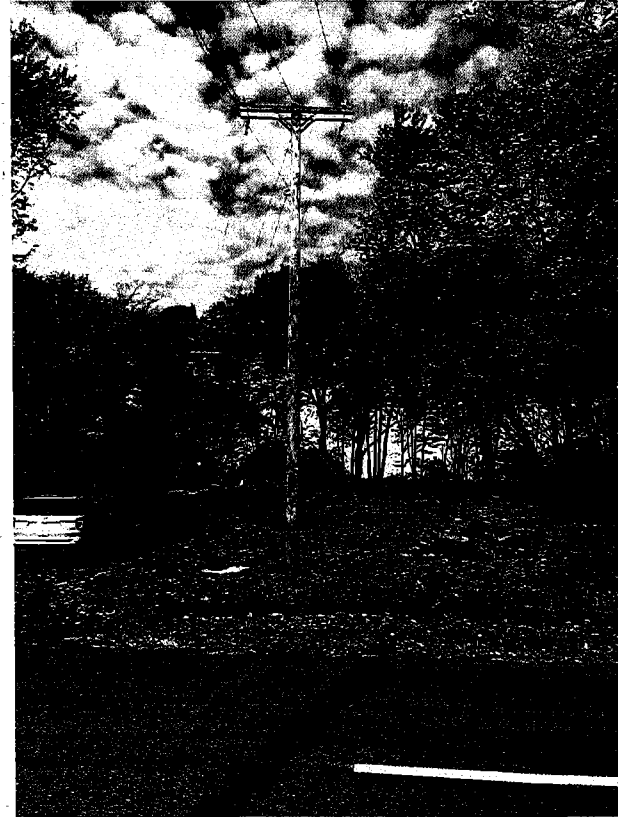
- UltraPole NXT provides the electric utility with **warrantied** protection for its preferred support system, the wood pole, using an **environmentally-advanced**, lower toxicity wood protection system.
- UltraPole NXT's tested formulation provides **long-term protection** for the wood structure with a lower long-term regulatory burden, and little or no changes to current structure design. This protection is warrantied for 50 years, and at the end of its service life, the pole might be used to **generate power** rather than being a waste.
- Oil-borne UltraPole NXT is a general-use pesticide that has all the **positive attributes of oil-borne preservatives** such as climbability.
- The active ingredient in UltraPole NXT is safe enough for **decks** that children play on, yet effective enough to replace TBTO in anti-fouling formulations used on the hulls of ocean-going vessels.



## Utility Benefits

### Usability

1. No design changes
2. No strength differences
3. No corrosion differences
4. No climbability differences
5. No conductivity increase
6. Non-Hygroscopic
7. No specie differences
8. Low odor – oil dependent
9. Similar:
  - Appearance
  - Handling
  - Weight
10. Line workers will be handling material treated with a non-restricted use pesticide.



# Utility Benefits continued

## Environmental

1. Not persistent in soil or water
2. No copper or other heavy metals
3. Low risk to accumulate in food chain
4. Low toxicity to soil microorganisms and earthworms
5. Low toxicity to birds
6. Not a suspected carcinogen, Dioxin-free Furan-free
7. Compared to steel, fiberglass and cement, DCOI uses less energy, fossil fuels and water in its life cycle analysis while producing less acid rain and greenhouse gases with lower eco-toxicity.

## End of Service Life

1. Co-gen fuel\* - has value
2. No Penta-like restrictions



# Utility Benefits continued

- **Marketing**

1. **Green Message to Consumers**

- Not a suspected carcinogen
- Dioxin-free, furan-free
- EPA Green Chemistry Challenge winner- marine anti-foulants
- DCOI used for consumer backyard projects
- Compatible with green solvent (biodiesel) - more testing pending
- Will be supported by LCA

- **Performance**

1. **Relativity- Equivalent to existing products**
2. **Life expectancy: confident enough to warrant for 50 years**

## Treater - UltraPole NXT Value Proposition

- UltraPole NXT provides the treater the opportunity to be the only supplier to offer its customers the preferred support structure- the wood pole, protected with the tested, **environmentally-advanced preservative system** that lowers their own regulatory burdens.
- UltraPole NXT utilizes a standardized, award-winning preservative active ingredient and combines it into a system that **integrates easily into today's oil-borne treating plants** and production processes.



  
**ULTRApole<sup>®</sup> NXT**

# Treater Benefits

## Key Plant Operation Benefits

- Same treating equipment
- Same Quality Assurance equipment
- Similar/same solvents
- Biodiesel option- a renewable replacement for petroleum solvents-more testing in process
- Oil carrier doesn't need penta solvency
- Similar treating process
- Compatible
- Low solution corrosivity
- DCOI waste is not considered an RCRA hazard waste under EPA Title 40 CFR 261.3.
- Plant has less stringent EPA reporting
- Plants workers will not need a Certified Pesticide Applicators license to treat
- No strong odor to spark neighbor complaints

# Treater Benefits continued

## Environmental Advantages

- Not a Restricted Use Pesticide
- Not persistent in soil or water
- No copper metals
- Low risk to accumulate in food chain
- Low toxicity to soil microorganisms and earthworms
- Low toxicity to birds
- Not a suspected carcinogen; Dioxin-free
- Removed from waste water by wastewater-treatment facilities
- No co-solvents required
- Not listed as FO32 or FO35 waste





## Consumer UltraPole NXT Value Proposition



- UltraPole NXT provides the consumer with confidence that their electricity supplier is using the **most environmentally-advanced and reliable** materials to supply their everyday power needs.
- UltraPole NXT offers tested protection for the grid that supplies them everyday while reducing the impact on the environment by lowering toxicity and the burdens on landfills at the **end of the life** of the product, at a very minimal cost over the life of the pole.
- UltraPole NXT provides the consumer the comfort of knowing that the same **active ingredient** that is used on their backyard deck, is in the utility pole in their front yard.

# DCOI & UltraPole NXT Pole - summary

## The pole

- Climbable
- Low to no odor
- Has equivalent corrosion rate as penta treated poles
- Has equivalent electrical resistance as penta treated poles
- More disposal options
- 50 year Limited Warranty

## The Preservative

- General use pesticide
- Non persistent in soil
- Low to no odor
- Effective at 1/3 the retention of pentachlorophenol
- The active ingredient in UltraPole NXT is also used in residential decks

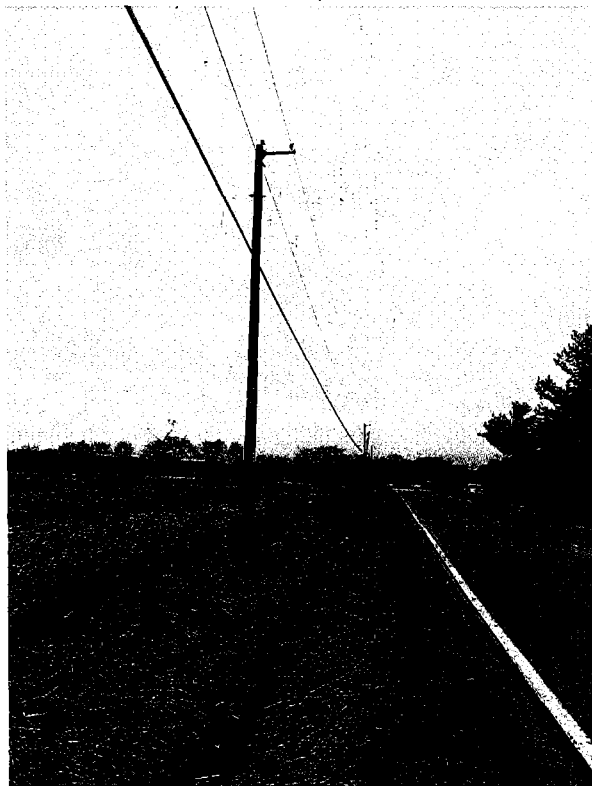
## Treated Douglas fir poles

| Poles treated with Preservative                                                          | Creosote | Penta    | CCA       | CuNaph   | DCOI     |
|------------------------------------------------------------------------------------------|----------|----------|-----------|----------|----------|
| Easy to climb                                                                            | Yes      | Yes      | No        | Yes      | Yes      |
| Treated with a restricted use pesticide                                                  | Yes      | Yes      | Yes       | No       | No       |
| Contain heavy metals (copper arsenic)                                                    | No       | No       | No        | Yes      | No       |
| Low to no odor                                                                           | No       | No       | Yes       | No       | Yes      |
| Used in residential applications (decks & railings)                                      | No       | No       | No        | No       | Yes      |
| Contain PAH's (Polycyclic Aromatic Hydrocarbon)                                          | Yes      | Yes      | Yes       | No       | No       |
| Contain dioxins furans                                                                   | No       | No       | Yes       | No       | No       |
| Warranty                                                                                 | No       | No       | No        | No       | Yes      |
| American Wood Protection Association (AWPA) Standard Retentions (UC4C) Book of Standards | 12.0 pcf | 0.60 pcf | 0.60 pcf* | 0.15 pcf | 0.20 pcf |

- Not recommended

# Poles in place in Ohio

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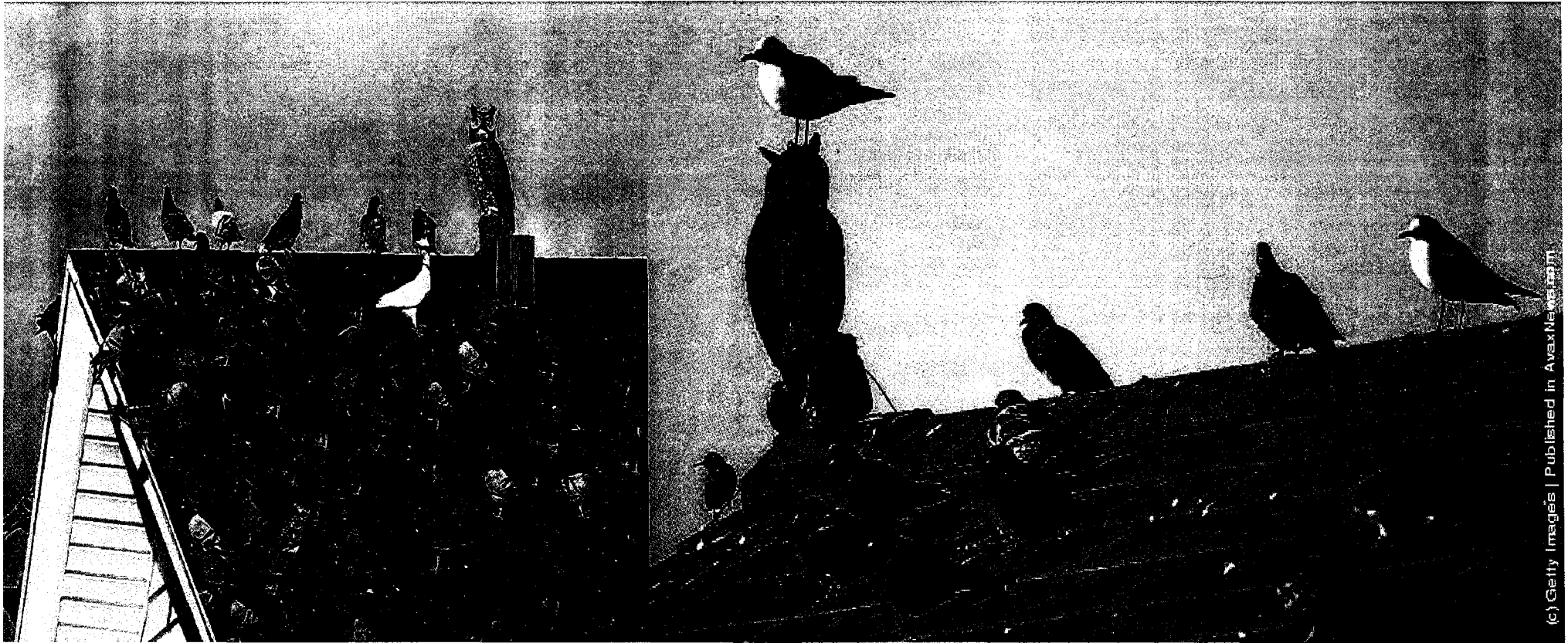


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27

# What used to work may not still work

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28

## ACTION ITEM

### McFarland Cascade

Significant investment (industry leader)  
Convert and dedicate a treating cylinder  
Southern Pine plant and  
Douglas Fir plant

### McFarland Cascade

"Environmental responsibility" mission  
Provide customers a more enviro-friendly pole

### Requires Utility Participation

Commitment to use poles  
Utility involvement in the implementation



# Thank you



Go to <https://treatedwood.com/utilities>

# Q/A ANSWERS