GUIDANCE FOR THE MANAGEMENT AND DISPOSAL OF CCA-TREATED WOOD

Top: This load is almost solely CCA-treated wood. It came from a marine construction contractor.

Bottom: This load is from a construction company that builds trusses and floor joists. It contains treated wood. Green colored sawn boards are treated. Other sawn boards may be untreated. Additional testing may be needed to confirm treatment.

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BACKGROUND

Chromated Copper Arsenate (CCA) is a chemical wood preservative containing chromium, copper and arsenic. These chemicals protect the wood from rotting due to insects and microbial agents. As a result, the use of CCA to pressure treat wood can prolong the service life of the wood 20 to 40 years beyond that without the preservative.

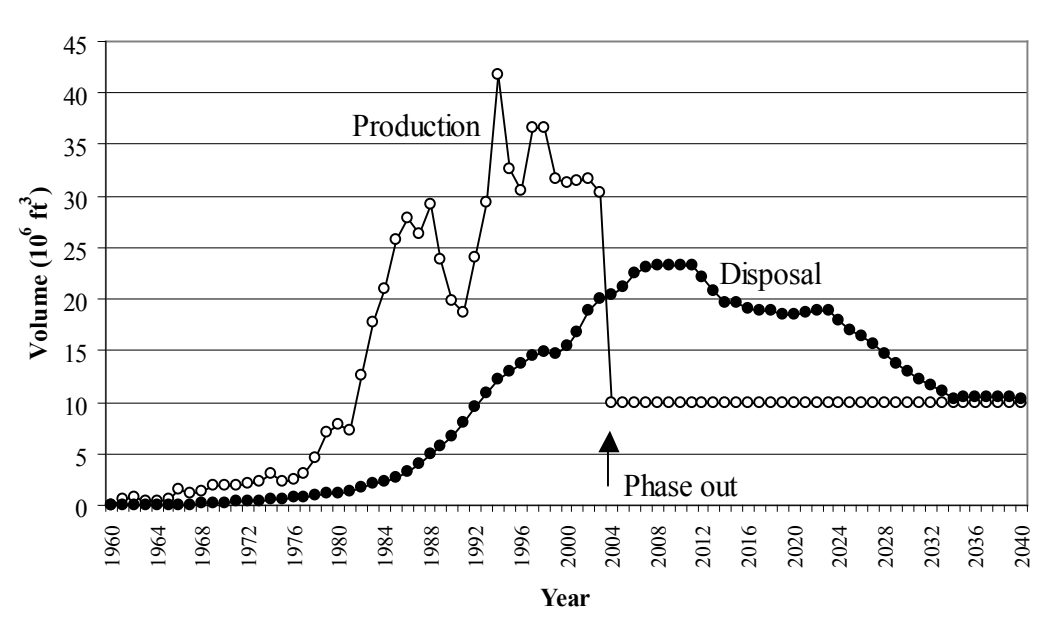
CCA has been used to treat wood since the 1940s, and since the 1970s CCA-treated wood has been used extensively in residential applications. Wood treated with CCA produces no odors or vapors, and you can paint or seal its surface easily. Wood products treated with CCA include lumber, timber, utility poles, posts and plywood. Because of its ease of use and the effectiveness of its treatment, CCA-treated wood was the most widely used type of treated wood in the country and represented about 80 percent of the wood preservation market through 2002.

In the late 1990s the Department became concerned about the large quantity of arsenic that was being imported into the state in the CCA chemicals and the CCA-treated wood. Due to population growth, this wood was needed to supply the high demand for residential housing in Florida. The Department was also concerned about how this CCA-treated wood might be managed when it is removed from service. Research conducted by Dr. Helena Solo-Gabriele, University of Miami, showed that the amount of this wood being disposed of after it reached the end of its service life was expected to increase significantly in the near future (Solo-Gabriele, et al, 2003a, Solo-Gabriele, 2003b). In addition, while not clearly confirmed by ground water data from Florida's unlined disposal facilities, research by Dr. Tim Townsend from the University of Florida indicated that CCA-treated wood and ash from burning this wood could pose a significant leaching threat to ground water if disposed of in unlined disposal facilities in Florida (Townsend, et al., 2001 and 2004). The research also showed that the ash from burning wood waste containing as little as five percent CCA-treated wood could be considered a characteristic hazardous waste due to the high arsenic concentrations in the ash.

These concerns led to communications by the Department with regulatory agencies in other states, with members of the wood treating industry in Florida and with the US Environmental Protection Agency (EPA). On March 17, 2003, the EPA signed an order in response to a voluntary request by wood preservative pesticide producers for cancellation of registration and termination of uses of certain CCA-treated wood products. This agreement required that use of CCA-treated wood for most identified residential uses cease by December 31, 2003. EPA published this notice of cancellation order on April 9, 2003 (EPA, 2003).

The Department is still faced with the problem that the amount of CCA-treated wood being disposed of will continue to increase in the years to come, and may pose an increasing environmental risk if disposed of in unlined facilities. If treated wood is made into mulch and then used in a residential setting, it may also pose unacceptable human health or environmental risks. Consequently, in 2003 the Department convened two Technical Advisory Groups (TAGs) to help study these issues. One TAG focused on potential ground water impacts and the other focused on operational issues. The TAGs consisted of voluntary members from the scientific, engineering and regulated communities who were familiar with the management problems associated with CCA-treated wood in Florida. One of the recommendations of the Operation TAG was for the

D I S C L A I M E R
The information contained in this document is intended for guidance only. It is not a rule and does not create any standards or criteria which must be followed by the regulated community. While the management of treated wood in accordance with this guidance is not expected to result in contamination of ground water or surface water or to pose a significant threat to human health, compliance with this document does not relieve the owner or operator from the responsibility for complying with the Department's rules nor from any liability for environmental damages caused by the management of these materials.



The projected amount of CCA-treated wood that will be disposed of in year 2010 is much greater than what it was in the year 2000.

Department to develop a guidance document on the management and disposal of CCA-treated wood.

PURPOSE

The purpose of this document is to develop guidance for the regulated community and the Department on the management and disposal of CCA-treated wood in Florida. It contains recommendations, which are of an advisory nature, for the collecting and recycling of treated wood. It also contains specific Best Management Practices (BMPs) that are designed to reduce the amount of treated wood disposed of at unlined facilities and to minimize the processing of treated wood into mulch at processing facilities. If the owner/operator of a facility employs and properly implements the BMPs contained in this document, the Department will presume that the owner/operator is making a reasonable effort to prevent significant quantities of CCA-treated wood from being disposed of or processed at the facility and will not take enforcement action should disposal or processing of some CCA-treated wood at the facility actually occur.

OVERVIEW AND APPLICABILITY

Solid waste disposal facilities in Florida are regulated by the Solid Waste Management Facilities rule, Chapter 62-701, Florida Administrative Code (F.A.C.). This rule currently allows CCA-treated wood to be disposed of in permitted Class I, II or III landfills and in permitted construction and demolition (C&D) debris disposal facilities. However, the studies cited above, as well as advice from EPA (EPA 2004b), have prompted the Department to initiate rulemaking to amend Chapter 62-701, F.A.C., in coordination with the development of this guidance document, to require that operators of unlined facilities implement a program to remove CCA-treated wood from the waste stream

prior to final disposal or use. Currently Florida's unlined disposal facilities would include most of the Class III landfills and C&D debris disposal sites in the state. Use of this guidance as part of such a program will help owners and operators comply with Department rules as well as minimize future liability for pollution or injury.

In addition, both the Department (DEP, 2002) and the EPA (EPA, 2004a) have determined that CCA-treated wood should not be recycled as mulch or used as fuel in a wood-fired boiler unless that wood-fired facility is specifically authorized by the Department to accept CCA-treated wood. The Department is also modifying Chapter 62-701, F.A.C. to specifically prohibit the use of CCA-treated wood as mulch, compost, or a soil amendment. Owner/operators of facilities that process wood wastes for disposal or use should follow this guidance to reduce any future liability for injury to people or the environment, as well as to comply with Department rules regarding CCA.

Finally, as is explained in the following section of this guidance, the Department recognizes the difficulty of identifying CCA-treated wood separately from other forms of wood treated with copper-containing preservatives. At this time there is no cost effective and efficient method to specifically identify arsenic in treated wood. The only practical solution to this dilemma at this time is to require the separation of wood waste which can be reasonably assumed to be treated with preservatives which might contain arsenic. Consequently, the advisory recommendations and the BMPs in this document will focus on managing all those forms of treated wood. [1]

HOW TO IDENTIFY TREATED WOOD

There are several types of wood preservative chemicals. The most common ones that have been or are used today in residential applications are CCA, alkaline copper quaternary (ACQ), and copper boron azole (CBA). Some wood in residential applications is also treated with borate alone. Other chemicals have also been used to treat wood for industrial applications. For example, pentachlorophenol (PCP) has been used in the past for telephone poles, but is becoming less popular today. Creosote is used to treat railroad ties and some construction pilings.

Treated industrial wood products can typically be identified based upon their large dimensions (e.g., railroad ties and utility poles). Thus, they are easier to visually identify and then remove from the waste stream. Treated wood used in residential applications, however, is largely composed of lumber, timbers and plywood in varying sizes and can be found in both treated and untreated forms. So how does one determine if these materials are treated?

The most common method for identifying treated wood among lumber, timber and plywood is to look at the color of the wood. Untreated wood and borate-treated wood typically have a light yellow color. The yellow color is the natural color of Southern Yellow Pine, the most common wood species used for building construction in Florida. Wood treated with copper, which includes CCA-, ACQ- and CBA-treated wood, varies in color from a very light green to an intense green color depending upon the amount of chemical impregnated into the wood. The figure to the left shows the color variations in wood resulting from different chemical treatment levels using CCA.

For CCA-, ACQ- and CBA-treated wood, a lower amount of chemical is added to wood intended for above ground and ground contact applications. A higher amount of chemical is added for wood intended for marine applications or serving as a load-bearing support for structures. The majority of the wood produced is treated using the lower amounts of chemical which imparts a light green color to the wood.

Once wood treated with copper has been in-service and has weathered, the green color is generally converted to a silver color. Unfortunately, untreated wood generally weathers to nearly the same silver color. This change in color

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[1] *Wood treated with other chemicals such as pentachlorophenol and creosote, while perhaps posing different environmental concerns, is not addressed by this guidance document.*

for treated wood occurs for wood containing the lower concentrations of chemical after only a year or two of weathering. As a result, sorting out CCA-treated wood from the waste stream based on the green color alone cannot ensure that all the treated wood is identified and removed.

Because of the difficulty in identifying treated wood based on its color alone, researchers are developing or have developed other methods to assist with this identification. Some of these methods may be useful to owner/operators who seek to improve their separation processes for treated wood. The rest of this Section will describe four of these methods and discuss the advantages and disadvantages associated with using them. A description of waste loads that typically contain treated wood is shown in the photos at the end of this guide.

Chemical Stains

Chemical stains refer to specially designed chemicals that can be applied directly to treated wood and show the appearance of a particular chemical in the wood by changing color, i.e., "staining" the wood. These stains can be easily used in the field to sort treated wood but are labor intensive since stain has to be applied to each piece of wood to be identified. The color change will usually occur within a few seconds and the costs of individual tests are low, on the order of a few cents per sample.

There are several stains that can be used to identify copper-treated wood. They were developed by the wood treatment industry to check the depth of penetration of the CCA preservative into wood. These stains include chrome azurol, PAN indicator[2] and rubeanic acid. They result in a distinctive color change where the stain is applied if copper is present in wood. PAN indicator is the preferred stain for sorting wood within the waste stream due to its short reaction time of about 12 seconds. When it reacts, it produces a color ranging from magenta to red. Untreated wood turns orange in color.

It is important to note, however, that these stains will also test positive if the wood is treated with the new copper-based alternatives, such as ACQ and CBA. Thus a positive result using PAN indicator will indicate that the wood is copper-treated but not necessarily arsenic-treated. Research is currently on-going to develop a stain specifically for arsenic.

While the PAN indicator is copper specific rather than arsenic specific,

Stain effects on untreated wood (left) and treated wood (right).

because of its low cost and ease of use it is currently the method of choice for assisting owner/operators to sort out treated wood. More information about the PAN stain indicator can be found on page 12.

Arsenic Test Kits

These tests refer to test kits developed for the analysis of arsenic in drinking water that have been modified for the analysis of arsenic in wood. The method requires the collection of a sawdust sample of the wood which is immersed in water. A series of chemicals are added to the wood/water mixture which convert arsenic dissolved in the water to arsine gas. This gas then reacts with a test strip to produce a distinctive color change on the strip. The method requires 45 minutes per sample for processing. Because the use of strong reagents and the formation of arsine gas (a highly poisonous form of arsenic that is dangerous to inhale), this test is not recommended for use by those who are inexperienced with the handling of chemicals.

X-Ray Technologies

The use of X-ray technologies for sorting wood waste has been evaluated at the pilot scale showing very promising results. These technologies, such as the hand-held XFR units by Innov-X and NITON, were found to identify the presence of arsenic in treated wood within a fraction of a second. Moisture and coatings on the wood did not interfere with the ability of the X-ray systems to identify arsenic in the wood, and they are safe when properly used.

X-ray technologies come in both hand-held and on-line configurations. The widespread use of these technologies, however, is limited because of the high capital costs of the equipment. For example, Innov-X currently sells a hand-held unit for $21,000, but they can also be rented from NITON (www.niton.com) or Innov-X (www.innov-xsys.com).

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2 PAN stands for the chemical name of 1-(2-pyridylazo)-2-naphthol, an orange-red solid with molecular formula $C_{15}H_{11}N_3O$.

Laser Technologies

Like X-ray technologies, laser systems, such as the laser induced breakdown spectroscopy (LIBS), have been evaluated at the pilot scale with very promising results. An experimental LIBS system has been tested for sorting wood waste by determining how well it can detect chromium in CCA-treated wood. However, the effectiveness of the system to identify treated wood was hampered by high moisture content in the wood and the presence of coatings on the wood. It is believed that such interferences can be overcome with the use of more powerful lasers which are available.

Since the LIBS system measures chemicals at the surface of the wood, it was able to identify the presence of coatings during testing. Thus, this system may be helpful if separation of painted wood from a waste stream is required. Since this technology is still under development, it is not yet ready for widespread use as a tool for sorting treated wood.

RECOMMENDATIONS FOR GENERATING, COLLECTING AND RECYCLING TREATED WOOD WASTE

As described previously, the Department recognizes that it may be very difficult to selectively remove CCA-treated wood from other forms of treated wood. Consequently, the following recommendations are designed to address all treated wood, as much as is practical. These recommendations are also advisory in nature and are separate from the BMPs described in the section, "Best Management Practices for Treated Wood."

Generation and Collection

The best location to separate treated wood waste for proper management is at the generating source. Generators will be more knowledgeable of the type of wood that is being handled, and separation at the source is much more effective than trying to separate treated wood later at a disposal or processing facility.

The Department recommends the following guidelines be followed for the generation and collection of treated wood waste.

- **Dedicated roll-offs:** Dedicated, separate roll-offs should be used at job sites involving the construction or demolition of wooden decks, stairs, fences, play ground equipment, landscaping materials, docks and for any other large-scale uses of treated wood. Generators should place all treated wood scraps in these roll-offs for later disposal at permitted lined landfills or other facilities permitted to receive treated wood. As much as is practical, sawdust generated from cutting the treated wood should also be bagged and disposed of at a lined landfill. Bags of sawdust can be placed in the dedicated roll-offs for treated wood.

- **No on-site burning of treated wood:** Treated wood should not be burned at demolition or construction sites as part of the site cleanup efforts. The burning of CCA-treated wood releases toxic fumes and produces a residual ash which is toxic.

- **No on-site mulching of treated wood:** Treated wood, especially CCA-treated wood, should not be ground up on-site and used as landscaping mulch or soil amendment.

- **Curbside collection:** When feasible, local governments should ensure that treated wood from renovations of fences and decks by homeowners that is collected through a curbside pickup program is not mixed with vegetative wastes, but is instead taken to a lined landfill for disposal.

Recycling

At this time, there are no acceptable recycling alternatives for CCA-treated wood, other than reuse of discarded lumber, timbers and poles through reuse and salvage centers.

BEST MANAGEMENT PRACTICE (BMP) FOR TREATED WOOD

As is described in the section, "How to Identify Treated Wood," the Department recognizes that it may be very difficult to selectively separate CCA-treated wood from other forms of treated wood. Consequently, this BMP is designed to maximize the removal of all treated wood from the waste stream. By following this guidance document, the Department will assume that all reasonable measures are being taken by the owner/operator to prevent the disposal or processing of CCA-treated wood at the facility.

◂ *Materials Recovery Facilities (MRFs)*

This Section applies to MRFs regulated under Rule 62-701.710, F.A.C. and C&D MRFs regulated under Rule 62-701.730(13), F.A.C. Typically, wood is separated from the waste stream at these facilities, size reduced, and used as landscaping mulch, boiler fuel or, when mixed with soil, initial cover at Class I landfills. In other cases the wood is disposed of in either Class III landfills or C&D debris disposal facilities. To ensure that significant quantities of treated wood are not managed in these ways at MRFs, the Department recommends that the following procedures be implemented by the owner/operator of the facility.

Initial scale house inspection/driver interview: Incoming trucks should be inspected visually to look for dedicated loads[3] of treated wood, especially from contractors specializing in the demolition and construction of fences, decks and docks. The name of the company may help identify contractors who would be likely to have a dedicated load. For additional information, the scale house operator may also ask the drivers what they are hauling. All dedicated loads should be diverted at the scale house for disposal at a lined disposal facility or properly managed at the MRF before disposal at a lined disposal facility.

Floor spotters and picking line workers: By rule, the MRF must have at least one trained spotter on duty whenever waste is being received. It is recommended that the MRF employ at least one floor spotter per sorting train at the facility. The floor spotter should observe loads as they are tipped onto the tipping floor and pull out larger pieces of treated wood that are listed in the table below. The picking line workers should pull out the smaller pieces of treated wood listed in the table not removed by the floor spotters. Separated treated wood should be placed in a roll-off container for disposal at a lined disposal facility.

Training requirements: The owner/operator should implement a training plan designed to help floor spotters and picking line workers identify treated wood. This training plan is in addition to the trained spotter requirements contained in Rule 62-701.710(4)(c), F.A.C. Teaching aids like those shown in the photos of typical waste loads (page 14) may be used. A teaching tool "example board" like that shown on page 13 should be posted near the picking line.

Spot-checking program: If wood is mulched at the MRF, the owner/operator must implement a monthly spot-checking program to evaluate how effectively treated wood is being removed from the recovered wood waste stream. This program can include the PAN indicator test (page 12) to identify the presence of copper-treated wood. The program can also include more sophisticated testing procedures to look for arsenic-treated wood. The details of any spot-checking program will have to be developed case-by-case, with the purpose of helping the owner/operator improve operations. The results of the spot-checking program need not be reviewed by Department staff for compliance purposes, and detections of treated wood in the mulch will not in themselves be indicative of a violation of Department standards.

Types of Wood That Are Typically Treated With CCA

Lumber, timber and plywood with a green color
Wood and wood posts from fences
Wood and wood posts from docks
Wood and wood posts from decks and outdoor stairs
Wood 4 inches by 4 inches or larger in diameter
Dimensional lumber labeled (with end tags) as treated wood
Wood from playground equipment
Lumber used in landscaping flower beds, gardens, etc.

3 "Dedicated loads" are defined as loads of predominantly or exclusively treated wood that would typically be generated by deck, dock and fence contractors.

Recordkeeping: The owner/operator should maintain records of the following: (1) volumes or weights of treated wood removed and disposed of in a lined disposal facility; (2) the name of the facility used for disposal; (3) treated wood training records for the floor spotter and picking line workers; and (4) results of the monthly spot-checking program, if required. These records must be kept with the other operational records of the facility and maintained as required by Rule 62-701.710(9), F.A.C.

◂ *Yard Trash Processors and Other Authorized Mulching Operations*

Yard trash processing facilities that receive and process only yard trash as defined in Rule 62-701.200(143), F.A.C. need not follow this Guide for their operations. The Department recommends that facilities that mulch or compost any clean wood[4] as defined in Rule 62-701.200(16), F.A.C., including yard trash processing facilities and mulching facilities at landfills, implement the following procedures.

No mulching of treated wood: The owner/operator (or spotter in the case of a landfill mulching operation) must make reasonable efforts to remove any treated wood listed in the table on page 7 from the wood waste stream prior to processing. Because of the difficulty of identifying it after-the-fact, extra care should be taken to assure that decorative wood mulches are free of treated wood. Any removed treated wood should be placed directly into a separate container and taken for disposal to a lined disposal facility.

4 Clean wood means wood, including lumber, tree and shrub trunks, branches, and limbs, which is free of paint, glue, filler, pentachlorophenol, creosote, tar asphalt, other wood preservatives or treatments. While this definition specifically excludes treated wood, the Department expects that a facility that accepts clean wood will inadvertently accept some treated wood that will need to be properly managed.

No burning: Treated wood must not be burned in open piles, air curtain incinerators or other uncontrolled conditions.

Recordkeeping: The owner/operator must maintain records of the volumes or weights of treated wood removed and disposed of and the name of the landfill used for disposal. These records must be kept with the other operational records of the facility and maintained as required by the facility's permit or applicable rules.

◂ *Class I Landfills, Lined Class III Landfills, and Lined C&D Facilities*

The Department recommends that owners and operators of Class I landfills, lined Class III landfills, and lined C&D facilities implement the following:

No mulching of treated wood: If mulching occurs at the facility, the operator should take adequate steps to ensure that treated wood is not being processed into mulch for off-site uses or for on-site uses outside of the lined disposal area. Because of the potential to increase leaching rates, the Department does not recommend size reduction of treated wood. However, treated wood may be processed and used as initial cover at the disposal area provided it is only used on interior slopes and meets the other requirements for initial cover contained in Chapter 62-701, F.A.C.

No burning: Treated wood must not be burned in open piles, air curtain incinerators or other uncontrolled conditions.

Management of treated wood: Treated wood which is separated from yard trash or other clean wood should be stored in a separate container or directly disposed of in a lined area. If the lined disposal facility is co-located with other unlined facilities, the owner/operator should include specific conditions in its operation plan to assure that the treated wood is disposed of only in lined areas.

◂ *Unlined Class III Landfills and C&D Debris Disposal Facilities*

To ensure that significant quantities of treated wood are not improperly managed at unlined Class III landfills and C&D debris disposal facilities, the Department recommends that the following procedures be implemented. However, if a Class III landfill or a C&D debris disposal facility is lined, then it may manage treated wood in accordance with the section on "Class I Landfills, Lined Class III Landfills, and Lined C&D Facilities" of this document.

Initial scale house inspection/driver interview: Incoming trucks should be visually inspected to look for dedicated loads[5] of treated wood, especially from contractors specializing in the demolition and construction of fences, decks and docks. The name of the company may help identify contractors who would be likely to have a dedicated load. For additional information, the scale house operator may also ask the drivers what they are hauling. All dedicated loads should be diverted at the scale house for disposal at a lined facility or properly managed at the unlined facility before disposal at a lined facility.

No burning: Treated wood must not be burned in open piles, air curtain incinerators or other uncontrolled conditions.

Signage: Facilities must install signs in the area of incoming traffic flow notifying customers that treated wood will not be accepted for disposal at the facilities, and that the only approved method of disposal is at a lined disposal facility.

Spotters: A trained operator or spotter must inspect the load and pull out larger pieces of treated wood that are listed in the table on page 7. In some cases the load may need to be spread out with compaction equipment or bulldozers in order for adequate spotting to occur. Separated treated wood should be placed in a roll-off container for disposal at a lined disposal facility.

Training requirements: The owner/operator should implement a training plan designed to help operators and spotters identify treated wood. This training plan is in addition to the trained operator and spotter requirements contained in Chapter 62-701, F.A.C. Teaching aids such as that shown on page 13 may be used.

Spot-checking program: If wood is mulched at the facility, the owner/operator must implement a monthly spot-checking program to evaluate how effectively treated wood is being removed from the wood waste stream. This program can include the PAN indicator test described on page 12 to identify the presence of copper-treated wood. The program can also include more sophisticated testing procedures to look for arsenic-treated wood. The details of any spot-checking program will have to be developed case-by-case, with the purpose of helping the owner/operator improve operations. The results of the spot-checking program need not be reviewed by the Department staff for compliance purposes, and detections of treated wood in the mulch will not in themsleves be indicative of a violation of Department standards.

Record Keeping: The owner/operator should maintain records of the following: (1) volumes or weights of treated wood removed and disposed of at a lined disposal facility; (2) the name of the facility used for disposal; (3) treated wood training records for the operator and spotter; and (4) results of the monthly spot-checking program, if required. These records must be kept with the other operational records of the facility and maintained as required by the facility's permit or applicable rules.

◂ *Waste-to-Energy (WTE) Facilities*

Generally, little treated wood goes to WTE facilities. The emissions from the de minimis amounts in the waste stream are believed to be adequately handled by each facility's air pollution control equipment. However, the impacts from large-scale burning of treated wood in WTE facilities have not been tested, and it is not known how much treated wood can be safely burned. Therefore, the use of WTE facilities for large-scale bulk disposal of treated wood is not recommended.

[5] *"Dedicated loads" are defined as loads of predominantly treated wood that would typically be generated by deck, dock and fence contractors.*

FREQUENTLY ASKED QUESTIONS

Q1. What do those labels/end tags mean? Can I use them when I sort?

A1. Yes. There is a lot of useful information on the labels attached to the end of dimensional wood. Labels identify the type of chemical that was used to treat the wood (CCA, ACQ, CBA, etc.), the level of treatment (pounds of chemical per cubic foot of wood, for example 0.25, 0.40, 0.80, 2.5, etc.) and the location of the treating plant. If the wood has a label then it is probably treated and according to this guidance should be separated out for disposal at a lined disposal facility.

Q2. Are pallets ever made from treated wood?

A2. Pallets are very rarely made from treated wood. For the most part, pallets can be safely ground up into wood chips for use as mulch or as fuel in a wood-fired boiler. As with other types of wood, inspection of pallets should follow the recommended guidelines.

Q3. Do I need to remove the arsenic-free treated wood products? Is there any harm from them?

A3. Compared with CCA, these other products pose little or no significant risk to the environment or to human health[6]. However, because of the difficulty in differentiating CCA-treated wood from other types of treated wood, this guidance recommends you remove all treated wood from the waste stream.

Q4. What precautions do I need to take when handling treated wood? Should my pickers who handle this type of material take more precautions than others?

A4. All pickers should wear eye protection, dust masks and gloves. Workers handling wood preserved with CCA should be sure to wash their hands before eating or smoking. CCA-treated wood splinters in the hands and fingers of workers are reported to be very problematic and should be removed as soon as possible. It is important to make sure that the entire splinter is removed. Removal may require medical attention.

Q5. How do I store this material?

A5. Treated wood, including CCA-treated wood, should be placed directly into a separate container for storage prior to disposal in a lined disposal facility. Simply storing the treated wood in a pile outdoors could continue to pose an environmental threat.

Q6. How do I find out where the lined disposal facilities are?

A6. The waste program staff at your District office of the Florida Department of Environmental Protection will know where the lined disposal facilities are located in your part of the state. See the contact information on page 16.

Q7. Can I refuse to accept loads of CCA-treated wood or any other treated wood?

A7. There is nothing in Florida state laws or rules that would require you to accept any particular kind of waste. Unless you are contractually obligated to accept this waste stream by your haulers or local government, you can refuse to accept loads of treated wood.

[6] *The new copper-based arsenic-free wood products (ACQ and Copper Azole) do leach about twice as much copper as CCA-treated wood. However, the higher levels of copper that leach out of ACQ and Copper Azole are not nearly as toxic as the arsenic that leaches out of CCA-treated wood. There is some concern about how much copper the new preservatives like ACQ and Copper Azole may leach into aquatic systems.*

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PAN STAIN INDICATOR

Principle: PAN stands for the chemical name of 1-(2-pyridylazo)-2-naphthol, an orange-red solid with a molecular formula $C_{15}H_{11}N_3O$. It is used to determine the presence of almost all metals excluding alkali metals. The reaction with the metals in CCA-treated wood produces a magenta to red color. Untreated wood turns orange in color. It is important to note that the stain is not specific to arsenic within CCA. It reacts with the copper, so that wood treated with any copper-based preservative (such as ACQ and Copper Azole) will also test positive using this stain.

Safety: Gloves and safety goggles should be used during the application of the stain. The stain should be applied in a fashion that would prevent inhalation. The stain should not be ingested and should be kept in a safe place that would prevent children or animals from ingesting the solution. A material safety data sheet (MSDS) is also available on this product that supplies additional safety information. You may also want to contact the chemical supplier of the stain for additional safety instructions. Receipt of the stain kit normally requires that the recipient sign a liability waiver.

Reagents: The PAN Indicator solution (a.k.a."stain") can be purchased as a pre-mixed solution or the basic chemical ingredients can be purchased and mixed at a laboratory. The pre-mixed solution is more convenient but usually more expensive, in particular if large quantities of the stain are needed. If large quantities of stain are needed, a more economical option would involve purchasing the basic chemical ingredients and mixing these ingredients in a laboratory. The pre-mixed solution can be purchased from Spectrum Chemicals. More information on obtaining these ingredients is shown in the following table.

Company	Phone Number	Cat. # for PAN	Cat. # for Methanol	Solution
Spectrum	***800-813-1514***	***P1000-04 (25g)***	***M1240 (20L)***	P-358-51
Sigma	800-325-3010	***01036-25G (25 g)***	***179337-20L***	
Fisher Acros	800-766-7000	***AC14631-0100 (10g)***	***A411-20 P-358-51***	

Procedure for Use

1. Using a dropper bottle, apply the stain to the wood. If the wood is relatively clean, the stain can be added directly to the wood. If the wood is soiled we recommend that a small area of the wood be carefully cut away to expose a clean area (approx 1 square centimeter). The stain works best if the wood is dry.

2. If testing mulch, it may be easiest to use a spray bottle. When using a spray bottle, be careful to spray the solution downwind to avoid inhalation.

3. Wait for color development (about 15 seconds). Color development is faster if applied to the transverse direction of the wood instead of the radial direction.

4. Note the color. If the sample turns a magenta color, then the wood is positive for copper. If the wood turns orange in color, then the wood is negative for most metals and is considered untreated.

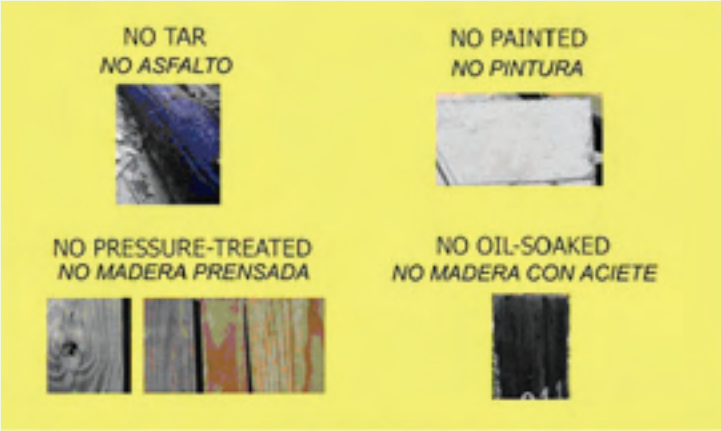
Interferences

1. Stain will not work properly on colored mulches or mulches that are very soiled.

2. Stain will sometimes react as positive with paint and nails on wood, even though the wood may be untreated.

TEACHING TOOLS FOR SORTING WITHOUT CHEMICAL TESTING

Materials Recycling Facilities (MRFs) and other facilities that will sort their waste wood can use signs like these to help sorters distinguish between wood that can be recycled and wood that should be sent to a lined disposal facility. Signs include Spanish and English text.



The top example can be used to explain how to sort wood based on its treatment.

This example can be used to explain how to sort wood based on the structure in which it was used.

PICTURES OF TYPICAL WASTE LOADS THAT CONTAIN TREATED WOOD

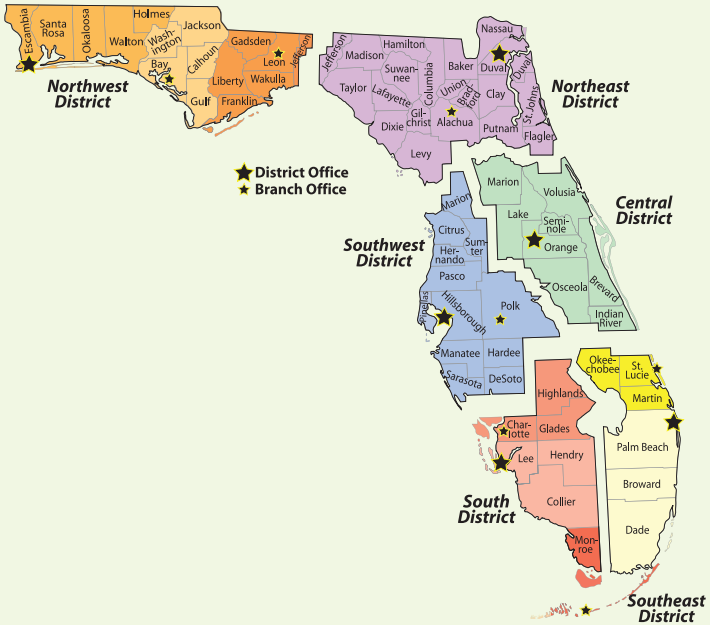
Top: Loads of yard waste may contain CCA-treated wood from fencing, fence posts or landscaping timbers. This piece of wood is likely treated due to its green hue and large dimensions.

Bottom: This load is a mix of yard waste, CCA-treated fencing and CCA-treated landscaping timbers. Treated wood can be identified based on the fact that it is sawn and is characterized by a green hue. The dimensional lumber in the bottom is obviously treated. It is difficult to tell for the highly weathered sawn boards.

Top: Loads from the demolition of outdoor structures will typically contain CCA-treated wood. Pole at the upper left is treated. Complete recovery of untreated wood from this pile will likely require testing in addition to visual separation.

Bottom: The green colored pole in the front of this pile is treated. Complete recovery of untreated wood from this pile will likely require testing in addition to visual separation.

Florida Department of Environmental Protection District Offices



This book is dedicated to the memory of William W. (Bill) Hinkley 1945-2005

WHERE CAN I GET MORE INFORMATION?

The waste program staff at your District office of the Florida Department of Environmental Protection can provide additional information including a list of lined disposal facilities that are located in your area of the state. The appropriate contacts and District boundaries are shown below.

FDEP Information Line,
Phone: (800) 741-4DEP
Fax: (850) 245-8810

FDEP Headquaters
2600 Blair Stone Road
Tallahassee, Fl 32399-2400
http://www.dep.state.fl.us/waste/

FDEP District Offices:

Northwest District Office
160 Governmental Center, Room 308
Pensacola, Fl 32502
(850) 595-8300

Southwest District Office
13051 N. Telecom Parkway
Temple Terrace, Fl 33637
(813) 632-7600

South District Office
P.O. Box 2549
2295 Victoria Avenue,
Suite 364
Fort Myers, Fl 33901
(239) 332-6975

Northeast District Office
7825 Baymeadows Way Suite 200B
Jacksonville, Fl 32256
(904) 807-3300

Central District Office
3319 Maguire Boulevard, Suite 232
Orlando, Fl 32803
(407) 894-7555

Southeast District Office
400 North Congress Avenue
Suite 200
West Palm Beach, Fl 33401
(561) 681-6600

Additional information on CCA-treated wood can be found at the Florida Center for Solid and Hazardous Waste Management's website for CCA research: www.ccaresearch.org.