Reduce Construction Waste Going to Landfill

Estimated wood waste from 2,000 ft$^2$ home – 3,000 lbs or 11 yds$^3$
Grind and Reuse Wood Products

Georgia EPD
No treated wood
No concerns with dimension lumber
Questions about engineered wood products
Builders won’t separate
Engineered Wood Products

**EWP glues** – phenol formaldehyde, isocyanate resins, resorcinol

**Finger-jointed studs glues** – vinyl acetates and polyurethane
Engineered Wood Product Study

Evaluating environmental and plant growth effects of EWP mulch

– Changes in soil chemistry
– Compounds in surface runoff
– Plant growth effects
Treatments

BSC - Bare Soil Control
DLC - 100% Dimension Lumber

EWP - 100% Engineered Wood Products
TRM - Typical Residential Mix
Treatments – 100% EWP

60% OSB
20% Plywood
5% Laminated veneer
5% Glulam
10% I-joist
Treatments – Residential Mix

30% EWP
25% Finger-jointed studs
45% Dimensional lumber
   25% White wood
   20% Yellow pine
First Screen - TCLP

100% EWP
Barium 0.295 mg/L; reg limit 5mg/L

Residential Mix
Pentachlorophenol 0.83 mg/L; reg limit 100 mg/L
Barium 0.299 mg/L; reg limit 5mg/L
Rainfall Simulation

May ’02 – 4 in/hr
100-yr 1 hr rainfall
Drought

May ’03 – 2.5 in/hr
10 yr 1 hr rainfall
Very wet

Initial soil moisture conditions measured - TDR
Rainfall Simulation

Volume-weighted runoff analyzed:

Tot N, NO₃-N, NH₄-N, Tot P, Ortho P, DOC, pH, specific conductance, BOD₅, volatile organics, total phenol; Runoff volume and TSS every 5 min.
Runoff Water Quality

2002 organic compound screening, compounds associated with perfumes and plastics

2003 quantitative analyses of purgeable halocarbons, BTEX, and phenols – non detected
Runoff Water Quality

Nitrogen from EWP significantly higher than other treatments due to organic nitrogen and ammonium-nitrogen.

Phosphorus concentrations fairly low (< 1 mg L\(^{-1}\)), but higher than USEPA criteria for streams (0.03 mg L\(^{-1}\)).
Runoff Water Quality

Note decreases in nutrient concentrations, particularly nitrogen, after one year.
Sampling May 2002

Turbidity during 1 hr 4 inch rainstorm; very effective for erosion control
Soil Sampling

Soils 0-2 and 2-6 in.
pH, lime requirement, avail P, Ca, Mg, Mn, Zn, tot N, NO$_3$-N, NH$_4$-N, S, Na, OM and microbial biomass

Before mulch put out and 1 year later
Surface Soils

Increase in ammonium-nitrogen and available phosphorus in surface (0-2 in.) Did not see increase at 2-6 in.
Plant Growth Study

Azalea

Lorapetalum

Burford holly

Center for Applied Nursery Research, McCorkle Nursery
Dr. Wayne McLaurin
Plant Growth Study

Treatments:
- standard potting mix
- standard potting mix + 3 in EWP mulch
- standard potting mix + 3 in TRM mulch
- standard potting mix + 2 in EWP mulch and topdress pine needles

Measure – Ht + width; dry wt, visual roots
Plant Growth Study

Grown 18 months;

No growth difference, no adverse impacts; roots grew into EWP mulch
Conclusions

Study indicate mulches with EWP component safe

One-time application

Loadings low

Can be used for:

Erosion control,

Heavy use substrate, or

Landscape mulch

(Published in Trans. ASAE 48(5): 1731-1738.)
Conclusions

Erosion control

Blankets and berms (similar to compost)
Conclusions

Heavy use areas or delivery pads
Conclusions

Mulch

No more than 2 to 3 inches

Keep 6 to 8 inches from foundation (termites)

Can top dress with pine needles
Thanks to All!

Funded by P2AD through the Solid Waste Trust Fund.

We appreciate the help of Steve Sandell – APA, Packer Industries, Tim Mayo – Universal Forest Products, Mr. Walter Boyles – Timber Products Inspection.

Dr. David Radcliffe, Dr. Larry West, Britt Faucette, Rebecca Byrd, Javier Sayago, Seth Sokol, Brian Bibbins, Jason Foster, Jason Governo, Anna Cathey, Jared, University of Georgia