

INTERNATIONAL MARKET PLACE PRESSURES TO KILN DRY LUMBER

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I am going to start off this presentation with the conclusion that many of us in Canada have already reached regarding the marketplace pressures to kiln dry lumber. *"If you sell your products into the offshore export market, plan on building dry kilns in your operations."*

There are three reasons that we reached this conclusion.

1. **Environmental Concerns**
 - Anti Stain Chemicals
 - Leaching Problems
2. **Performance in Use**
 - Home Warranty
 - Codes & Standards
3. **Plant Health**
 - Bark Beetles
 - Pinewood Nematodes

ENVIRONMENTAL

B.C. produces 3.6 billion FBM of lumber that is sold unseasoned annually. Most of this volume is sold to offshore export markets. For over 50 years we treated with chlorophenols which were consistently effective against mold and stains caused by fungi. B.C. mills voluntarily moved away from chlorophenols during the 1987/89 period.

Most anti-stain chemicals leach off during rainfalls. Penta is particularly bad, as it is extremely toxic to fish. The B.C. government introduced a regulation in 1989 that only permits 6 ppb of penta leachate into the waterways. Other products such as TCMTB, PQ8 AND NYTEK have a limit of 200 ppb.

On September 1, 1990, the regulation will reduce the leachate to 15 ppb. Currently we have not been able to achieve a 15 ppb level (nor do we know how we will).

The B.C. industry used \$5 million worth of penta annually. The non penta products used today cost \$20-25 million.

During the 1987-89 period the B.C. coast industry spent between \$10-20 million in application equipment alone. It is my belief the B.C. lumber industry spent more money on trying to find the answer to green protection than all of the softwood producers combined and yet our sawmills paid out over 1 1/2 million dollars in stain claims last year.

What will happen in September when leachate regulation calls for 15 ppb?

Options:

1. Kiln dry our lumber (not possible? Currently 9-10%)
2. If not wrap all lumber?
3. Our hope is that Agriculture Canada will register, alternatively less toxic products, such as NP1 or F2.

PERFORMANCE IN USE

There is no question that dry lumber performs better in use than green lumber.

One of the larger home builders in Japan using the North American platform frame system, used to use green Hem-Fir. About five years ago, when this firm built about 5000 units a year, they had a strange thing happen. One night the occupants of a house, that was about 5 months old, were awakened by a loud noise. When they went downstairs they discovered the ceiling had given way. A ceiling joist, loaded with compression wood on one edge, broke loose due to the internal stresses which build up due to longitudinal shrinkage on this one edge. This company no longer uses green lumber.

The marketplace is more and more demanding dry lumber. The UK TTF (Timber Trade Federation) wrote to the major B.C. shippers requesting a date when only dry lumber will be shipped.

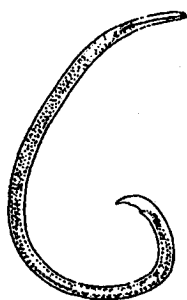
Many countries now have 5 or 10 year warranties on new houses. If contractors have to back houses for this time period they tend to reduce the risk by using quality assured products. Codes and standards of many countries are changing to reflect maximum 20% moisture content.

PLANT HEALTH

The area that will probably force kiln drying of export lumber, is the area of plant health.

Most European countries replanted their forests after the second world war. In the case of UK & Ireland, seeds for these trees came from Canada. These trees are now reaching maturity and while they thank us for the seeds they do not want our insects!

Regrettably, we have some nasty insects which can and do kill many of our trees. Large tracts of Lodgepole Pine forests are killed annually by bark beetles. These beetles lay their eggs in the bark. The resulting larvae live in the bast or inner bark area and create channels in the inner bark, cutting off the tree's food supply.



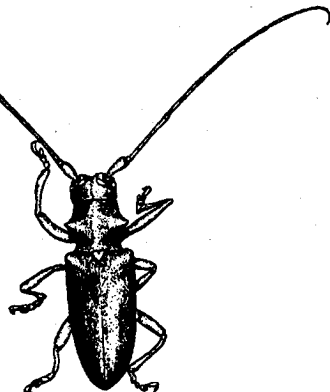
Pinewood Nematode

In order to prevent the transfer of these bark beetles (and not have to kiln dry the wood) we developed a debarking agreement with the UK and EIRE. Eventually the debarking certification program was adopted by 7 other supplying countries including the U.S. Everything was going well until Europe heard about the pine trees in Japan that were wilting and dying. The culprit causing the problem was not a bug type insect, but rather a microscopic form of tape worm called *Bursaphelenchus Xylophilus*, or more commonly known as the Pinewood Nematode.

The Nematode when fully grown is about 1mm long, and .2mm in circumference. The Nematode has no legs, so it cannot walk; no wings, so it cannot fly. It isn't able to crawl on the ground like a snake. The only way its able to get into trees, is to be vectored. The only known vectoring insect, is the monochamus Beetle; more commonly known as the Sawyer Beetle.

The Nematode goes through 2 phases:

1. Reproductive phase
2. Dispersal phase



Sawyer Beetle

During the dispersal phase it seems to hibernate waiting for the vector insect. When the beetle gets near, the nematodes enter the beetle trachea.

Question? How many PWN's can live in a sawyer beetle?

Answer: The average is 20,000. The maximum number found exceeded 79,000. when the adult insect leaves the tree in the spring it flies to the growing shoots of pine trees and begins maturation feeding. It is at this stage that the PWN leaves the beetle and slithers through the moisture of the tree.

Yesterday's "USA Today" had an article on insects. The article stated that one female cockroach produces 40 offspring every 6 weeks. If all these bugs reproduce, that's 10 million roaches in one year. A female nematode lays 80 eggs in 4 weeks, that's more than 1 1/2 times as many as the female cockroach. For all this to happen however, conditions have to be ideal. The prolificacy of nematodes is highly dependent on temperature, it requires a mean temperature in excess of 20°C.

Nematodes are found in trees across Canada and in at least 34 states here in America. No trees are known to have died in Canada because of PWN. In the states, mainly trees that have been stressed due to drought, have succumbed to PWN. However, considerable damage to trees in Japan, Korea and Southern China is occurring. The nematodes in Japan seem to multiply in area where the mean temperature is 24°C or higher.

The nematodes literally choke the tree. The tree's defense mechanisms develop terpenes and phenolics. The nematodes produce enzymes. Between these toxic combinations and the damage to the growing wood cells, the tree soon wilts and dies. Over 2 million m³ of red pine dies annually in Japan from PWN.

Pines are a popular species throughout Europe and Scandinavia. It is understandable that they do not want our PWN and in the case of the UK & Ireland, our monochamus vectors.

Effective January 1990, the UK & Canada have developed an enhanced certification program, which excludes bark and grub worm holes. This is currently being expanded to include the USA.

Some countries want a zero risk factor and have banned green lumber from North America. Sweden, Finland, Norway & Ireland now have a regulation banning green lumber.

WHERE DO WE GO FROM HERE?

The EEC Plant Health Standing Committee is meeting on May 14th. On the agenda of this meeting is a proposal that calls for all softwood lumber imports from N.A. to be kiln dried to 20% M.C. I am often asked "*What do you think will happen?*" My reply is "*kiln drying is coming, it is just a matter of time!*"

Of the three areas environment, performance in use, and plant health. I think plant health will be the first to force the issue.

The Date: Some Canadian Government officials feel it will be by the end of 1990. A friend of mine in the UK Forestry Commission feels it will be by the end of 1991. My personal belief is it will occur sometime in 1992.

You will be interested to know:

We have just formed a Kiln Club, which will be known as "The B.C. Coast Dry Kiln Association"

We have a commitment from Forintek for 3500 man hours of research, which will place priority on finding more economical ways of drying Hemlock. Particularly thicker Hemlock lumber.

Most of the COFI member operations are studying the effect of mandatory kiln drying would have on their company.

As I said in the beginning of my presentation, "*If you sell your products in the offshore export market, plan on building dry kilns in your operations.*"