

# THE ENVIRONMENTAL BENEFITS OF USING INDUSTRIAL HEMP

## ABSTRACT

*The widespread use of industrial hemp could result in numerous environmental benefits, including but not limited to: (1) less reliance on fossil fuels, especially from foreign sources; (2) more efficient use of energy; (3) less long-term atmospheric build-up of carbon dioxide; (4) forest conservation; (5) agricultural pesticide use reduction; (6) dioxin and other pollution reduction; and (7) landfill use reduction. Hemp is superior to many other plants for many uses. Present limitations on the use of industrial hemp are economically, environmentally and socially irrational.*

by Andy Kerr, The Larch Company

## MOVING FROM THE HYDROCARBON TO THE CARBOHYDRATE ECONOMY

The term "carbohydrate economy" was coined by David Morris of the Institute for Local Self Reliance, and North American Industrial Hemp Council founding board member.

Anything we make from a hydrocarbon can be made from a carbohydrate. The many wonderful products that come from hydrocarbons come with a large price: pollution that is massive and difficult to deal with. Every one of the products and benefits we receive from hydrocarbons (ancient and nonrenewable plant and animal material) can also be had from carbohydrates (new and renewable plant material). From a pollution standpoint, hydrocarbons are inherently dirty, carbohydrates are inherently clean.

We can get much of our industrial feedstock from the farm, rather than the oil well or the mine. We can grow our fuel domestically, rather than periodically going to war overseas for it.

## WHY INDUSTRIAL HEMP

Hemp has beneficial characteristics not offered by other plants. North American Industrial Hemp Council board member Jeff Gain was the chair of the Agriculture Research and Commercialization Corporation, a USDA corporation seeking to promote the "bio-based" economy. He has also served as chief executive officer of both the American Soybean Association and of the National Corn Growers. He believes industrial hemp is the next soybean.

Hemp—because of its very long fibers, rapid growth, and the versatile oil from seed—can be manufactured into many products. It can competitively—both economically and technically—replace industrial feedstocks, which are inherently polluting and unsustainable. Hemp fiber can be used to make bio-based plastics and construction materials. The long fibers of hemp can be used in making composite plastics, which, while not as strong as fiberglass, is strong enough for many applications. There are also worker safety benefits, it's recyclable and is priced lower than glass.

## SHORTENING THE CARBON CYCLE

In marked contrast to petroleum, growing our fuel from annual plants means that the carbon that is released into the atmosphere is captured by next year's growth. Long-term build-up of carbon in the atmosphere from fuel burning ends if we switch to annual plants. Because of its fast growing nature, hemp may be a major contender in the processing of bio-based fuels.

### **FOREST CONSERVATION**

Industrial hemp has great potential to displace much of the wood currently being used for fiber in this nation. In the Upper Midwest and South, it appears that hemp fiber can be grown less expensively than wood fiber for use in paper.

One of the largest paper companies has told NAIHC Board Chair Bud Sholts, that if hemp can be grown in Wisconsin, they will be using it for 45% of their feedstock at their mill on the Fox River within five years. Similarly, Another huge paper company intends to move 90% of their world feedstock to non-forest sources within 10 years and see hemp as a major component of that. Being international, if they can't grow hemp in the US, they will grow it where they can.

NAIHC Board Member William Miller retired as the Technical Director of the Forest Resources Division of Union Camp. He believes that hemp can supplant wood and make better composite construction products.

### **POLLUTION (ESPECIALLY DIOXIN) REDUCTION**

One of the most serious pollution problems is from various compounds of chlorine. A major contributor to dioxin (arguably, the deadliest chemical we've ever come up with) is emissions from paper mills. Consider Wisconsin's Fox River. It has a string of paper mills and is the largest contributor of dioxin to the Great Lakes. A USDA Forest Service marketing analysis (available from North American Industrial Hemp Council), which was withdrawn under pressure from the White House Office of National Drug Control Policy, shows that all of Wisconsin's "fine" (usually means chlorine bleaching) paper production from wood could be made with hemp, and quite profitably to the farmers. Curtis Koster, NAIHC board member and long associated with new products research for International Paper (world's largest paper maker), says the low-lignin content of hemp (compared to wood) makes it possible to pulp with fewer chemicals. Hemp produces a naturally brighter pulp. If bleaching is desired for maximum brightness, hemp is very conducive to hydrogen peroxide bleaching with the only byproducts being water and oxygen.

Another serious pollution problem is off-gassing of formaldehyde and other noxious compounds from the binders used in panel construction products. Hemp fiber is compatible with new soy-based binders, eliminating any toxic side effect.

### **SUSTAINABLE AGRICULTURE**

Hemp is naturally resistant to most pests, so it doesn't need pesticides or herbicides. In rotation, it leaves a weed-free field for the next crop. Huge reductions chemical use can be achieved by returning to rotation agriculture. Hemp grown in rotation with wheat in England resulted in a 20% increase in wheat yield, without any commensurate increase in chemical or energy inputs. In Ontario, hemp grown in rotation with soybeans reduced cyst nematode infestation by 50-75%, reducing the need for chemical pesticides.

A limiting factor in sustainable agriculture is the lack of profitable rotation crops. Hemp could be quite profitable. Studies in Wisconsin and Kentucky suggest that per-acre profits from hemp could exceed most other crops. Hemp's extensive root system and the falling leaves in the field (the stalks are what are sought) leave better soil tilth. Hemp needs fertilization, as it consumes a lot of nitrogen. Because it is fast growing and has an extensive root system, it might be useful in removing excess nitrogen fertilizer from fields, thereby reducing agricultural runoff problems. On fields where nitrogen is the limiting factor to crop growth, hemp requires about 50% of the nitrogen fertilizer as corn.

50% of all pesticides used in this country are associated with cotton. Hemp can substitute for many uses of cotton.

Farmers are losing money on corn, wheat and soybeans. In North Dakota, farmers have been making more by selling the wheat straw to a particleboard plant than from selling the grain. Hemp can make a difference in the agronomic equation. Due to the bulkiness of the fiber, local processing facilities will have to be built near the farms. This can provide new jobs for rural America.

### RECYCLING/END USE EFFICIENCY

Product recyclability is an increasing concern. Fiberglass is notoriously non-recyclable. The hemp substitute is quite recyclable. Adding long-fiber hemp pulp to recycled paper greatly increases the number of times it can be recycled before the fibers are too short.

Any product made from plant material is inherently easier to either recycle or decompose at the end of its life.

### CONCLUSION

Our knowledge hemp is limited. What we do know suggests that hemp can be an important part of moving from a hydrocarbon to a carbohydrate economy. Very little research and development funds have been invested and will not be until the regulatory climate changes in the United States. Thirty other industrial democracies can distinguish between industrial hemp and marijuana (both are *Cannabis sativa*). Marijuana has high amounts of THC, its psychoactive ingredient. While THC is detectable in industrial hemp, it is not a threat to anyone. (See the North American Industrial Hemp Council's *Hemp and Marijuana: Myths and Realities*). Hemp is being grown in England, France and Canada. The Bobbies, Gendarme and Mounties are not concerned.

Andy Kerr heads The Larch Company and may be reached at [andykerr@andykerr.net](mailto:andykerr@andykerr.net). He is Treasurer and a founding board member of the North American Industrial Hemp Council. Kerr is best known for his two decades with the Oregon Natural Resources Council, the organization best known for having brought you the northern spotted owl.

He participated, by personal invitation of President Clinton, in the Northwest Forest Conference held in Portland in 1993 for which WILLAMETTE WEEK gave Kerr a "No Surrender Award." WILLAMETTE WEEK said Kerr "is entirely unwilling to give an inch when it comes to this state's remaining old-growth timber.

TIME reporter David Seideman, in his book SHOWDOWN AT OPAL CREEK, described Kerr as the "Ralph Nader of the old-growth-preservation movement."

Jonathan Nicholas of THE OREGONIAN characterized Kerr as one of the "Top 10 people to take to (the) Portland bank" for "his gift of truth."

The OREGONIAN'S NORTHWEST MAGAZINE CHARACTERIZED him as the timber industry's "most hated man in Oregon."

The LAKE COUNTY EXAMINER called Kerr "Oregon's version of the Anti-Christ."

In a feature on Mr. Kerr, TIME magazine titled him a "White Collar Terrorist," referring to his effectiveness in working within the system and striking fear in the hearts of those who exploit Oregon's natural environment.

The CHRISTIAN SCIENCE MONITOR characterized Kerr as "one of the toughest environmental professionals in the Pacific Northwest.

In his book *Lasso the Wind*, NEW YORK TIMES correspondent Tim Egan said of Kerr, "(h)e has a talent for speaking in such loaded sound bites that it was said by reporters that if Andy Kerr did not exist, someone would have to invent him....(Kerr) forced some of the most powerful timber companies to retreat from a binge of clear-cutting that had left large sections of the Oregon Cascades naked of forest cover."