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Senator Janette Millin Young, Chairperson
Economic Development, Agriculture and Planning Committee
31st Legislature of the US Virgin Islands
P.O. Box 1690
St. Thomas, VI 00804

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Senator Millin Young:

Thank you for the opportunity to testify before the 31st USVI Legislature Economic Development, Agriculture and Planning Committee on Bill No. 31-0100, An Act amending Title 7 Virgin Islands Code, Chapter 1, to allow for the cultivation of Hemp and other related purposes. This testimony is limited to cultivation of industrial hemp (*Cannabis sativa,* subspecies *sativa)* and does not extend to cultivation of *Cannabis* subspecies for medicinal or recreational use.

My name is Paul Chakroff. I hold bachelor and master degrees in environmental sciences and am a board certified environmental professional (CEP). My testimony is fundamentally based upon research I conducted into industrial hemp as Executive Director of St. Croix Environmental Association (SEA) in 2012, but today I testify as an individual, not representing SEA or any other entity. I have no financial interest in the industrial hemp industry.

I support viable, sustainable and environmentally friendly development that enhances and supports the St. Croix agricultural sector and the St. Croix economy. Act No. 31-0100 clearly meets these criteria and I support it with the one condition discussed at the end of this testimony.

It clearly appears that cultivation of industrial hemp has the potential of being a viable, sustainable and environmentally friendly agribusiness on St. Croix. In my review I focused on the following:

- Environmental conditions required for hemp cultivation on St. Croix;
- Environmental impacts of cultivation and assessing whether growing hemp is a "greener" alternative to other crops or manufactured products from the standpoint of environmental pollution, impacts on land and water conservation, exotic and invasive species issues; and
- Relationship to other opportunities for agricultural production, including biofuel.

<u>Environmental conditions required for industrial hemp cultivation on St. Croix</u>

St. Croix has suitable conditions for cultivation of *Cannabis:*

- Hemp prefers a mild climate, humid atmosphere and a rainfall of at least 25-30 inches per year;
- Hemp cultivation has a relatively high water demand (36 – 60 gallons/wet pound), so irrigation at certain times of the year and in more arid areas of the island would likely be required.

- Hemp requires well aerated well drained soils of pH 6 or higher
- Hemp is a low maintenance crop.
- The average yield of dry hemp stalks in Europe is about 5 – 7 tons per acre, yielding ~1.3 tons per acre of final fiber product

Cultivation of *Cannabis* appears to be relatively "green" compared to cultivation of other fiber crops

Environmental pollution

Hemp is an efficient weed suppressor and no herbicides or pesticides are needed for its cultivation. In contrast, conventionally grown cotton uses more insecticides than any other single agricultural crop. Each year cotton producers around the world use more than 10% of the world's pesticides and nearly 25% of the world's insecticides.

Climate change – While organic cotton is considered to be carbon neutral, conventionally grown cotton is not. Hemp construction materials and hemp fabric is considered to be carbon neutral. In fact, hemp's rapid growth makes it one of the fastest CO2-to-biomass conversion tools available, more efficient than agro-forestry per land use.

A comparative assessment of hemp, cotton and polyester textile fibers by the Stockholm Environment Institute found hemp to have a lower ecological footprint and lower water demand than cotton; and zero industrial air emissions such as those generated in the manufacture of polyester textiles:

- Hemp represents the lowest Ecological Footprint of the three textile fibers compared;
- Hemp productivity is 1.3 tons of dry fiber per acre compared to 0.6 tons of cotton lint per acre;
- Cotton cultivation requires 0.8 million gallons of water per acre, equivalent to 1,176 gallons of water consumed per pound of cotton fiber produced.
- Hemp requires 255 gallons of water per pound of useful fiber production

Relating these findings to the debate over a plastic bag ban, I suggest that reusable hemp grocery bags would be substantially "greener" than cotton canvas bags and paper bags, and likely be greener than disposable polyethylene bags and possibly even reusable nonwoven polypropylene bags.

Impacts on land and water conservation efforts

I do not support cultivation of *Cannabis* on forest conservation lands or lands that should be conserved as territorial parks due to their ecological, historical and/or cultural assets.

Exotic and invasive species issues

Clearly an exotic species (indigenous to Central and South Asia) currently present on St. Croix, my research finds no indication that *Cannabis* is an invasive species.

Relationship to other agribusiness opportunities, including biofuel production

I would not endorse hemp cultivation if it were to compete with food or fodder crop production. Based upon my understanding of the acreage in the private and public sector suitable for agricultural production, I do not believe that this is an either/or situation. It appears that St. Croix can sustain food and fodder production, hemp production and fuel crop production on already disturbed low-slope lands

without threat to forested conservation lands, wetlands, or other lands of high ecological, historical and/or cultural value.

While relatively fast growing, hemp is not our best fuel crop option. Hemp is fast growing with yields of 11 tons/acre/ year dry weight. By comparison to other fuel crops, it is better than tan tan, but not as good as Australian Pine, Guinea grass or Giant King Grass: 4 dry tons/acre/year for tan tan, 15 dry tons/acre/year for Australian pine and Guinea grass, and 33 dry tons/acre/year dry for Giant King Grass. Thus I would not propose it as an alternative fuel crop. In the production of hemp fiber however, only about 30% of the harvested hemp biomass is usable fiber. I.e. 70% of biomass generated may be used as soil amendments or for biofuel generation from anaerobic digestion or combustion.

I asked Tibbar Energy about the 70% non-fiber biomass from a hemp agribusiness, and it could be anaerobically digested and/or used as green fertilizer on Giant King Grass. Thus, in addition to the direct economic benefits, a hemp agribusiness could indirectly support USVI's goal of reducing dependence upon petroleum fuels, such as diesel, Propane or LNG. In a study conducted by Island Energy Innovations, LLC, computer models indicate that dispatchable renewable energy, such as that provided by the Tibbar Energy project, or energy generated from any other agricultural byproducts is critically important in any energy portfolio that relies on a high percentage of renewable energy resources.

Industrial Hemp Commission

I do not see the need for yet an "Industrial Hemp Commission" to be established in the Department of Agriculture (DOA). We have too many dysfunctional Commissions already. For example, there exists a Commission on Aquiculture and Mariculture established in 2001 (Act No. 6471) that has never met. I think assembling a 15-member commission will hamper, not help advance the program.

I recommend establishment of a staff position in the Department of Agriculture and make it the employee's responsibility to cover all the bases represented by the proposed commission. And, I would broaden the DOA staff position to include all industrial-scale agriculture, not limiting it to industrial hemp. This DOA Division could help advance commercial milk goat initiatives, biofuel production, large-scale aquiculture, and otherwise promote commercial agricultural in the USVI.

I do think the Senate would have to identify start-up funds to be disbursed through the Department of Agriculture budget for support of a staff position on industrial agriculture. This should not be an unfunded mandate. I suggest that continuing funding of the DOA staff position and program would come from contributions from the agro-industry benefiting from the government services offered by the Department of Agriculture.

I support Sec. 24 of the Act that dictates that all fees assessed under the subchapter be deposited in the "Agriculture Revolving Fund" already established under 33 V.I.C. §3018.

Thank you for the opportunity to testify in support of Bill No. 31-0010, noting my concern about the proposed administrative structure for implementation.

Sincerely,

Paul Chakroff, MSc, CEP
Independent Environmental Consultant