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January 27, 2014

The studies below and more studies are cited to at http://njgasp.org/E-Cigs_White_Paper.pdf. Please note that international jurisdictions that ban electronic smoking device (use, sale and/or importation) are listed in IV.

I. Key studies concluding health concerns with use of and exposure of third parties to electronic smoking devices:

1. University of California, San Francisco, (a WHO Collaborating Center on Tobacco Control World Health Organization) **prepared a *Background Paper on E-cigarettes*, dated December 2013, for the World Health Organization's Tobacco Free Initiative.** Executive summary states:

- **People passively exposed to e-cigarettes aerosol absorb nicotine (measured as cotinine), with one study showing levels comparable to passive smokers.**
- "In 2010, the WHO organized a global panel of experts to review the evidence and **there is no evidence to show that it can help you quit smoking,**" http://www.njgasp.org/Phillippines_WHO_ecigs_warning_7-4-13.pdf

2. Roswell Park Cancer Institute study published this month! (Roswell Park is one of the most prestigious and respected Cancer institutes in the world; study in the journal *Nicotine and Tobacco Research*). **Found "significant amounts of nicotine" emitted in 2ndhand e-cigarette vapor smoke. Raises concerns about 2ndhand e-cig vapor smoke exposure,** especially to vulnerable populations including children, pregnant women and people with cardiovascular conditions." Researchers concludes that their study can "guide policymakers as decisions are made about the regulation of nicotine delivery devices.

3. Roswell Park Cancer Institute study published in March 2013. Found that e-cigarettes delivers 14 times as much formaldehyde, 7 times as much acetaldehyde, 6 times as much o-methylbenzene, 3 times as much cadmium and twice as much lead **as an FDA-approved nicotine inhaler**, as well as acrolein, toluene, p,m-xylene, NNN and NNK, which were not detected in the inhaler.

4. German Cancer Research Center (DKFZ) study (published in April 2013) evaluated the current state of e-cigarettes. **Concluded that e-cigarettes emit fine and ultrafine inhalable liquid particles, nicotine and cancer-causing substances into the air that can have an adverse health effect on 3rd parties exposed to the vapor, and that nonsmoker protection legislation should apply to e-cigarettes.** The e-cigarette liquids contain ingredients that on short-term use irritate airways and may lead to allergic reactions which may be harmful to health when inhaled repeatedly over a prolonged period of time.

5. The Fraunhofer Wilhelm-Klauditz-Institut of Germany, a preeminent research facility (published their July 2012 study in the journal *Indoor Air*) found in their study **that e-cigarettes are putting**

detectable levels of significant carcinogens and toxins into the air: acetic acid, acetone, isoprene, formaldehyde and acetaldehyde. They concluded that **e- cigarettes marks a new source for chemical and aerosol exposure in the indoor environment.**

6. Dutch Health Ministry's National Institute for Public Health issued an "E-Cigarette Factsheet" on December 3, 2103. **Key finding: e-cigarette ingredients may irritate the respiratory system, and some ingredients contain carcinogenic substances** like formaldehyde and tobacco- specific nitrosamines.

II. E-cigarettes are NOT less harmful than regular cigarettes:

- University of California (Riverside) study (published in March 2013) tested e-cigarette vapor for 22 elements in periodic table. Found that **nickel was about 2–100 times higher in concentration in e-cigarette aerosol than in Marlboro brand cigarettes** (Table 1).

III. Serious health concerns with nicotine's harmful effects on the body:

Electronic smoking devices emit "significant amounts of nicotine" into the air (as per the December 2013 Roswell Park study), resulting in exposing innocent third parties to nicotine, in public places and workplaces. Some of nicotine's harmful effects on the body:

- Nicotine causes headaches in persons exposed to secondhand smoke. Nicotine, one of the components of tobacco, triggers blood vessels to constrict, reducing blood flow to the brain and the covering of the brain (the meninges). Decreased blood flow leads to depressed brain activity, which is a major component of migraines. Usually, by removing the stimulus (nicotine), headaches will be relieved.
http://my.clevelandclinic.org/healthy_living/smoking/hic_smoking_and_headache.aspx
- Nicotine releases epinephrine (adrenaline), which raises blood pressure, heart rate and respiration and glucose levels.
- Nicotine is a vasoconstrictor – harder for the heart to pump through constricted arteries.
- Nicotine promotes blood vessel damage by promoting cellular damage in vascular smooth muscle cells, promoting plaque formation, and causing blood vessel damage.
- Nicotine is known to affect oxidative stress and to have adverse effects on brain and lung development in children.
- Women who use nicotine gum and patches during the early stages of pregnancy face an increased risk of having babies with birth defects, says a study that looked at about 77,000 pregnant women in Denmark. Roswell Park Cancer Institute's study raises concerns about 2ndhand vapor smoke exposure to pregnant women.
- Nicotine and the increased cholinergic activity it causes have been shown to impede apoptosis, which is one of the methods by which the body destroys unwanted cells (programmed cell death).

IV. International jurisdictions that ban the sale, importation, and/or use of all ESD:

- Argentina - bans import, distribution, commercialization, advertising
- Singapore - bans sales, import, distribution
- Brazil - bans sale, import, advertising
- Israel - bans sale, import
- Panama -bans sale, import, distribution
- Jordan - bans importation
- Victoria, Australia - bans sale, use and advertising
- Turkey - bans sale and use
- Hong Kong bans use and sale, unless a pharmaceutical product
- Canada - bans sale, import, advertising if ecigs contain nicotine

11/27/13 – Holland's Ministry of Health calls for studies on health concerns with e-cigarettes.

11/28/13 - European Commission proposes to overturn a vote that rejected outlawing electronic smoking devices in their present form, due to the devices normalizing the action of smoking.

<http://www.telegraph.co.uk/news/worldnews/europe/eu/10481328/EU-seeks-ban-on-all-currently-available-e-cigarettes.html>

DISCLAIMER: This information is created by the Tobacco Control Policy and Legal Resource Center of New Jersey GASP, which provides educational information, educational guidance and educational technical assistance on tobacco control topics. The information presented is not intended as, nor to be construed, or used as legal advice, and should not be used to replace the advice of your legal Counsel.

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