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Pending legislation to include e-cigarettes in Los Angeles smokefree law

1 message

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Mon, Mar 3, 2014 at 9:25 PM

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I would like to submit the attached letter supporting the proposed ordinance. The letter is attached as a PDF file and the text is pasted into this email below:

March 3, 2014

Mayor Eric Garcetti

Members, Los Angeles City Council

via email

Dear Mayor Garcetti and Council Members,

I am writing to support pending legislation you are considering that would include e-cigarettes in Los Angeles' current smokefree ordinance. This is a sensible piece of legislation that mirrors what cities large and small are doing all over the country (and the world).

Last December two colleagues at UCSF and I prepared an extensive review of the scientific evidence at the request of the World Health Organization, "Background Paper on E-cigarettes (Electronic Nicotine Delivery Systems)" (copy attached).

While the scientific evidence is still accumulating, there is no question that e-cigarettes pollute the air breathed by bystanders with nicotine, ultrafine particles, volatile organic compounds, and other pollutants and that bystanders take these chemicals into their bodies. Having spent decades cleaning up the indoor air, there is

no reason to reintroduce a new form of indoor air pollution.

In particular, it is my understanding that you have been provided with a technical report prepared for the e-cigarette advocacy group CASAA by Igor Burstyn entitled "Peering through the mist" that concludes that "there is no evidence that vaping produces inhalable exposures to contaminants of the aerosol that would warrant health concerns by the standards that are used to ensure safety of workplaces."

The problem with this study is that it employs occupational threshold limit values (TLVs) to evaluate the potential risks posed by various toxins in e-cigarettes. TLVs are used to assess health effects for occupational chemical exposures that are generally much higher (often orders of magnitude higher) than levels considered acceptable for ambient or population-level exposures. (Employing an occupational standard to evaluate risk to the general population is the same approach to risk assessment as those conducted for secondhand smoke by those affiliated with the tobacco industry decades ago, which also concluded that secondhand tobacco smoke could not produce any adverse health effects.) TLVs also do not consider exposure to sensitive subgroups, such as people with medical conditions, children and infants, who might be exposed to secondhand e-cigarette emissions, most notably nicotine. You should not rely on this study as justification for allowing the citizens of Los Angeles to be involuntarily exposed to e-cigarette pollution.

Another common claim is that e-cigarettes are helping people quit smoking and any restriction on where people can use e-cigarettes would undermine this benefit. The evidence from large population-based studies is just the opposite: overall e-cigarette use is associated with *less quitting* cigarettes. Moreover, even if the claims that e-cigarettes help people quit smoking were true, there is absolutely no evidence that creating e-cigarette zones would interfere with quitting smoking.

I am also very concerned about two exceptions in the legislation, one for theatrical productions and another for vaping lounges.

The seemingly minor amendment to exempt theatrical productions will have big effects given the fact that LA is a center for producing television programs and motion pictures, because it will make it legal to use e-cigarettes in these venues, which could end up influencing youth all over the world to start using e-cigarettes and begin a life of nicotine addiction. And the e-cigarette companies have been very aggressive in using Hollywood to promote their products.

In terms of vaping lounges, it is important to ensure that *all* they are selling is e-cigarettes and associated paraphernalia and that they not be allowed to sell food or drink so as to prevent opening up a serious loophole in the law. Even better, I suggest that you consider grandfathering existing vaping lounges (as long as they only sell e-cigarettes) and prohibit opening new such businesses.

I had the privilege of appearing before the Los Angeles City Council decades ago when it was considering legislation to limit and, eventually, prohibit smoking in workplaces and public places. I have to say that the current debate over e-cigarettes makes me feel like I have got in a time machine and returned to the 1980s. There are calls for "more science" and "protecting rights," pro-tobacco interests are hiring political consultants, running advertisements and placing robocalls and well-organized "vapers' rights" groups are pressuring the Council.

The fact is that Los Angeles, like hundreds of other places, saw past the controversy that pro-tobacco forces generated (and today the e-cigarette companies are being taken over by the tobacco industry) and passed its smokefree legislation. And the public loved it.

Now is the time to do the same thing and take the simple step of adding e-cigarettes to your smokefree ordinance.

If I can provide any additional information, feel free to contact me.

Best wishes,

/S/

Stanton A. Glantz, PhD

Professor of Medicine

American Legacy Foundation Distinguished Professor of Medicine

Director, Center for Tobacco Control Research and Education

2 attachments



Glantz-letter-e-cig-LosAngeles.pdf

67K



ecig_Report_Dec2013.pdf

1513K

Background Paper on E-cigarettes (Electronic Nicotine Delivery Systems)



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University of California, San Francisco
WHO Collaborating Center on Tobacco Control

Prepared for
World Health Organization
Tobacco Free Initiative

December 2013

EXECUTIVE SUMMARY

- E-cigarettes are evolving rapidly and being marketed like cigarettes were in the 1950s and 1960s
 - Marketing is back on television and radio
 - Aggressive placement in convenience stores (next to candy) and in other stores (next to medications)
- Youth are rapidly adopting e-cigarettes
 - E-cigarettes contain candy flavors (e.g., cherry, chocolate, turkish delight)
 - High levels of dual use
 - Youth who use e-cigarettes are heavier (not lighter) smokers
 - Youth who use e-cigarettes are much less likely to have stopped smoking (OR 0.1-0.2)
 - The temporal and causal relationships between e-cigarette use and smoking have not been determined
- E-cigarettes have not been proven to help people quit smoking
 - Longitudinal population studies show that e-cigarette use is associated with a lower odds of quitting
 - The randomized trial comparing e-cigarettes to nicotine patch shows that in the context of low level behavioral support, the quit rate for those using e-cigarettes is low and similar to those using a nicotine patch
- There is a high level of dual use of e-cigarettes and conventional cigarettes among adults
- The hope that e-cigarettes will reduce harm by delivering "clean" nicotine will not be realized in continuing dual users
 - Continuing to smoke any conventional cigarettes confers essentially the full cardiovascular risk
 - Cancer risk may only be modestly affected because smoking duration is more important than intensity
- E-cigarettes deliver lower levels of toxins than conventional cigarettes, but they still deliver some toxins
- E-cigarettes pollute the air less than conventional cigarettes, but they pollute the air
 - They do not just emit "harmless water vapor"
- People passively exposed to e-cigarettes aerosol absorb nicotine (measured as cotinine), with one study showing levels comparable to passive smokers
- There is little research on direct health effects
 - One study shows short-term pulmonary effects
 - Evidence of cytotoxicity in animal and human *in vitro* test systems
- While the original e-cigarette companies were competing with conventional cigarette companies, all the major cigarette companies are now in the e-cigarette business

- E-cigarette companies are using the same political and public relations strategies as cigarette companies (most notably organizing users, similar to how the cigarette companies organized smokers)
- E-cigarette policy making in many countries is dominated by assumptions about their use (utility as a smoking cessation aid or for harm reduction) that are not supported by the evidence available to date

At minimum, these policies should be implemented immediately:

- Prohibit the use of e-cigarettes anywhere where the use of conventional cigarettes is prohibited
- Apply the same restrictions on e-cigarette advertising and promotion as apply to conventional cigarettes
- Ban the use of characterizing flavors in e-cigarettes
- Prohibit claims that e-cigarettes are effective smoking cessation aids until such time as there is convincing scientific evidence that such claims are true for e-cigarettes as they are actually used in the general population.
- Regulate e-cigarettes to set standards for product performance in order to minimize risks to users and bystanders

Because the product, the market, and the associated scientific evidence surrounding e-cigarettes are all evolving rapidly:

- All legislation and regulations related to e-cigarettes should allow for flexibility to adapt regulations expeditiously in response to new science, including evaluation of different models for regulating e-cigarettes, as it accumulates
- No country or subnational jurisdiction should be compelled to permit the sale of e-cigarettes
- Legislation and regulations regarding e-cigarettes need to take into account the fact that, unlike conventional cigarettes and other tobacco products and medicinal nicotine replacement therapies, e-cigarettes can be altered by users to change the nicotine delivery and be used to deliver other drugs
- There should be transparency in the role of the e-cigarette and tobacco companies in advocating for and against legislation and regulation, both directly and through third parties
- FCTC Article 5.3 should be respected when developing and implementing legislation and regulations related to e-cigarettes

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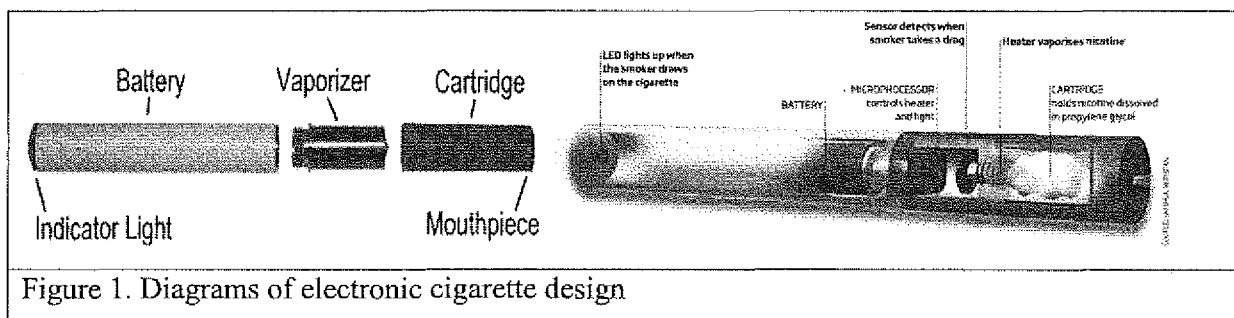
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This document served as one input for discussion on ENDS at the WHO Study Group on Tobacco Product Regulation (TOBREG) meeting in Rio in December, 2013. The interpretation of results and recommendations in the present document represent the opinions of the authors and not necessarily WHO or TOBREG.

BACKGROUND

E-cigarettes (also known as electronic nicotine delivery systems or ENDS) are a class of products intended to deliver nicotine-containing aerosol (incorrectly commonly called “vapor”) to a user by heating a solution typically comprised of propylene glycol and/or glycerol (glycerin), nicotine and flavoring agents (Figure 1). E-cigarettes without nicotine are also available. The first of these devices that started the trend in use we describe in this report was invented by a Chinese pharmacist, Hon Lik, in 2003. The U.S. patent application for the device states that the product is "An electronic atomization cigarette that functions as substitutes (sic) for quitting smoking and cigarette substitutes." (Patent #8,490,628 B2) E-cigarette sales have risen rapidly since they entered the marketplace in 2007. (Pauly et al., 2007, Cobb et al., 2010) These products are marketed as healthier alternatives to tobacco smoking, useful in quitting smoking and reducing cigarette consumption, and a method for circumventing smokefree laws and enabling users to "smoke anywhere." (Grana and Ling, in press) Interest in the products has been increasing (Ayers et al., 2011) and an exponential rise in sales over the past 3 years (2010-2013) has been due, at least in part, to widespread advertising via television commercials and print advertisements, that often feature celebrities, for the most popular brands, including those owned by tobacco companies. (Felberbaum, 2013)



In 2009, the WHO Study Group on Tobacco Product Regulation (TobReg) addressed the emerging regulatory issues pertaining to e-cigarettes. TobReg noted that there was very little published scientific evidence on the health effects of e-cigarettes, or their efficacy for smoking cessation (stated in TobReg Report 955) (World Health Organization, 2009) and that there was not sufficient evidence to support the cessation and health claims made by companies and those in the public health community who were advocating e-cigarettes for harm reduction. The report states (p.7), "In addition to nicotine dependence, the sensory effects of the product, social and

marketing forces and perceptions of harmfulness and potential benefits should be considered in examining the initiation, patterns of use and development of addiction."(World Health Organization, 2009) Meanwhile, e-cigarette prevalence has increased dramatically (Table 1, bottom of document)

Both the 2009 TobReg Report 955 and the 2012 World Health Organization Framework Convention on Tobacco Control (FCTC) Conference of the Parties report on e-cigarettes (November 2012)(FCTC/COP/5/13, 2012) articulated concerns about how the products may create interference with implementation of the FCTC articles that address non-price measures to reduce demand for tobacco products, particularly Articles 8(protection from tobacco smoke exposure), 9 (tobacco product content regulation), 10 (regulation of tobacco product disclosures), 11 (regulation of tobacco product packaging), 13 (tobacco advertising, promotion and sponsorship), because e-cigarettes mimic tobacco cigarettes, and thus may interfere with limits on the indirect promotion of tobacco use/products. E-cigarettes may hinder protection from exposure to tobacco smoke (Article 8) because, while the limited published research suggests that e-cigarettes emit much less and lower levels of toxicants into the environment than conventional cigarettes, they still subject bystanders to passive exposure (called "passive vaping" in Schripp et al., 2012)(Schripp et al., 2012) E-cigarettes are widely advertised and promoted (often inaccurately) as being exempt from clean indoor air laws. The similar appearance of people using e-cigarettes and those using conventional cigarettes can complicate enforcement of restrictions on smoking conventional cigarettes. Moreover, the e-cigarette aerosol has not been proven safe for inhalation by bystanders. A main concern with the products stated in the 2009 WHO report was lack of data on the safety of the ingredients in the e-cigarette solution, especially the safety of repeated inhalation of a heated mixture of propylene glycol and other chemicals.(World Health Organization, 2009) In 2009, TobReg recommended that if e-cigarettes were to be considered medicines or tobacco products, they would be subject to the labeling and warnings requirements in Articles 10 and 11. The TobReg report placed great emphasis on the products' potential interference with Article 13, which addresses advertising and sponsorship by industry. Both Articles 8 and 13 can have the effect of denormalizing the use of tobacco products and indirect promotion of tobacco products through limiting exposure to tobacco smoke in public places (Article 8) and thus the modeling of smoking behavior in public and limiting advertising

Table 1. Prevalence of e-cigarette use in various countries as measured by published population-based surveys

Authors	Country, sample description, n	Ever use among general population (%)				Ever use among smokers (%)			
		2009	2010	2011	2012	2009	2010	2011	2012
Regan et al. 2013	U.S., Adults 18+, n=10587 (2009); n=10328 (2010), ConsumerStyles nationally-representative survey	0.6	2.7	--	--	Not reported	18.2	--	--
King et al. 2012	U.S., Adults, 18+, HealthStyles survey nationally-representative, mail-back (n=4,184) and online (n=2505) modes n=6689 in 2010, online only n=4050 in 2011	--	2.1 mail, 3.3 online	6.2 online	--	--	6.8 mail, 9.8 online	21.2 online	--
Pearson et al. 2012	U.S., Adults 18+, 2 samples								
	Nationally-representative online sample (Knowledge Networks), 2010, n=2649	--	3.4	--	--	--	11.4	--	--
	Legacy Longitudinal Study of Smokers (smokers and former smokers), 2010, n=3648	--	--	--	--	--	6.4	--	--
McMillen et al. 2013	U.S., Adults 18+, nationally-representative samples recruited via 2 survey modes: telephone-based (n=1504) and online (n=1736), Social Climate on Tobacco Control survey, 2010	--	1.8	--	--	--	14.4	--	--
Dockrell et al. 2013	U.K., Adults 18+, nationally-representative online panel (YouGov), 2010: n=12597 adults; 2010 n=12432	--	--	--	--	--	--	--	21.6
Adkison et al. 2013	ITC 4-country survey, Adults 18+, * July 2010-June 2011*								
	U.S. (n=1520)	--	--	--	--		20.4		
	Canada (n=1581)	--	--	--	--		10.0		
	U.K. (n=1325)	--	--	--	--		17.7		
	Australia (n=1513)	--	--	--	--		11.0		

Popova and Ling 2013	U.S., Adults 18+, nationally-representative online sample (Knowledge Networks), current and former smokers, n=1836	--	--	--	--		--	--	20.1	--
Cho et al. 2011	Korea, Adolescents, middle school and high school, n=4,341, national survey in 2008*	0.5*	--	--	--	--	--	--	--	--
Lee et al. 2013 (in press)	Korea, Adolescents, middle school and high school, grades 7-12, ages 13-18, (Korean Youth Risk Behaviour Study) n=75,643				9.4%					
CDC NYTS 2013	U.S., Adolescents, middle and high school, 2011, 2012 National Youth Tobacco Survey (n's not reported)	--	--	MS: 1.4 HS: 4.7	MS: 2.7 HS: 10.0		--	--	--	--

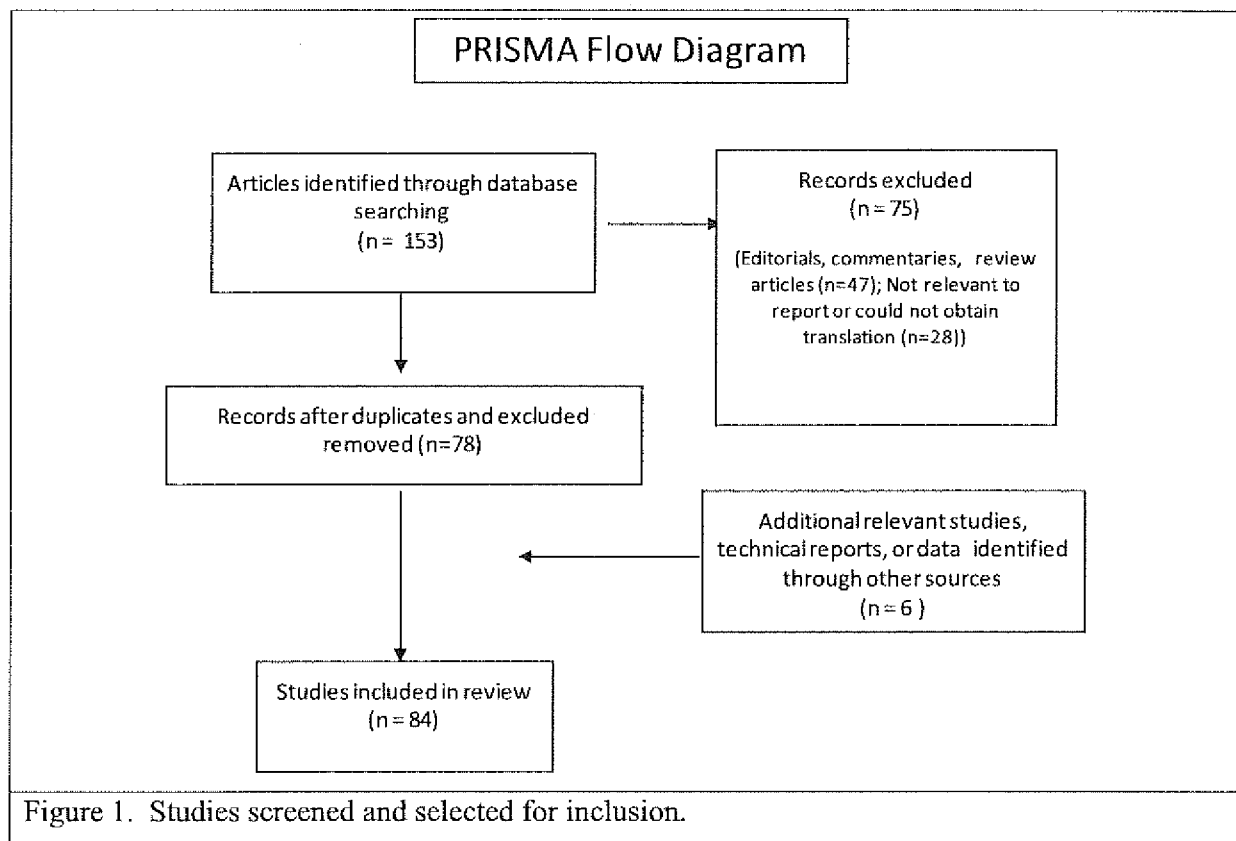
1 and sponsorship by tobacco companies (Article 13). These policy measures could be undermined
2 by the permitted use of a cigarette-like product that produces a smoke-like aerosol in public and
3 widespread, unrestricted advertising of such products in ways that have been restricted for
4 cigarettes and other tobacco products by the implementation of Article 13.

5 There has been rapid e-cigarette product innovation in the marketplace despite many
6 unanswered questions about their safety, efficacy for harm reduction and cessation, and total
7 impact on public health. Several commentaries and editorials have been published in the
8 scientific press debating these issues (e.g.,(Britton, 2013, Benowitz and Goniewicz, 2013,
9 Chapman, 2013, Cobb et al., 2010, Etter, 2013, Wagener et al., 2012)) and the number of
10 scientific studies on e-cigarettes is growing. Both the individual risks and benefits and the total
11 impact of these products occur in the context of the widespread and continuing availability of
12 conventional cigarettes and other tobacco products, with high levels of “dual use” of e-cigarettes
13 and conventional cigarettes at the same time among both adults(Adkison et al., 2013, King et al.,
14 2013, Dockrell et al., 2013, Pearson et al., 2012, Regan et al., 2013) and youth.(Centers for
15 Disease Control and Prevention, 2013) This dual use raises questions about the possible harm
16 reduction benefits. It is important to assess e-cigarette toxicant exposure and individual risk as
17 well as health effects of e-cigarettes as they are actually used in order to ensure safety and to
18 develop evidence-based policies and a regulatory scheme that protects the entire population,
19 children and adults, smokers and non-smokers, in the context of how the tobacco industry is
20 marketing and promoting these products.

21 This report reviews the literature on e-cigarettes available as of September 2013, as well
22 as an update of tobacco industry involvement in the e-cigarette market, research
23 recommendations, global regulations pertaining to e-cigarettes, and potential options for
24 regulation.

26 **METHODS**

27 Initial searches were conducted via the PubMed electronic database using keywords to
28 identify studies describing electronic cigarettes (electronic cigarette, e-cigarette, electronic
29 nicotine delivery systems). The initial searches yielded 153 studies, of which 125 were identified
30 as relevant to electronic cigarettes (Figure 1). Seventy-eight published papers retrieved from
31 those searches were formally reviewed to meet the aims of the present report. Seventy-five



1
2 studies were excluded from systematic review were commentaries that did not provide original
3 data, (they are cited to provide background and context.) Searches using the same search terms
4 as above were conducted in the WHO regional databases (electronic cigarette, e-cigarette,
5 electronic nicotine delivery systems). Relevant papers were located in only one database,
6 BIBLIOTECA Virtual em Saude Latin America and Caribbean, and all of the results were
7 already retrieved by the initial searches in PubMed. In addition, the authors, working with WHO,
8 reached out to investigators in the field in an effort to locate studies that had not yet been
9 published (submitted or in press). Each study included in the systematic review was analyzed for
10 content, quality and industry funding (tobacco or e-cigarette companies). After review, each
11 study was categorized according to the main subject headings: marketing and media, prevalence,
12 chemical analyses, biological effects, cessation of conventional cigarettes. Some articles were
13 discussed in other sections of the report: product engineering and product performance and risks
14 to users and bystanders.

Authors also reviewed and included non-peer-reviewed documents, including the World Health Organization Study Group on Tobacco Product Regulation, Technical Report Series 955,(World Health Organization, 2009) a FCTC Conference of the Parties report: “Electronic nicotine delivery systems, including electronic cigarettes. Report by the Convention Secretariat,”(FCTC/COP/5/13, 2012) German Cancer Research Center report, “Electronic Cigarettes – An Overview,”(German Cancer Research Center, 2013)a technical report: “Peering through the mist: What does the chemistry of contaminants in electronic cigarettes tell us about health risks?”(Burstyn, 2013) Several published news articles and relevant websites are cited to provide supporting documentation and context to the scientific review.

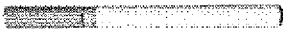



PRODUCTS (TYPES, ENGINEERING)

E-cigarettes have many names, including electronic cigarettes, ENDS and e-hookah. For the purposes of this report all these products will be referred to as e-cigarettes. Product engineering has been evolving since the first e-cigarettes were documented as arriving on the global market in 2007(Pauly et al., 2007). As of late 2013, there was wide variability in product engineering, including varying concentrations of nicotine in the solution that e-cigarette use to generate the aerosol (also called "e-liquid"), varying volumes of solution in the product, different carrier compounds (most commonly propylene glycol with or without glycerol (glycerin), a wide range of additives and flavors, and battery voltage. Battery voltage differences and unit circuitry can result in great variability in the products' ability to heat and convert the nicotine solution to an aerosol and, consequently, may affect actual nicotine delivery and other chemicals delivered to users and emitted in the exhaled aerosol. Products come in a variety of nicotine strengths (including some without nicotine), usually expressed in mg/ml of solution or percent concentration. Williams and Talbot (2011) measured e-cigarette products' performance across three indicators: airflow rate required to generate aerosol, pressure drop , and aerosol density via three different protocols, finding that air flow and pressure drop required to activate e-cigarette products is quite variable between brands.(Williams and Talbot, 2011) Moreover, the products are "smoked" differently than cigarettes. Hua and colleagues conducted an analysis of 9 videos with tobacco smoking and 64 with e-cigarette "vaping" to assess differences in "smoking" topography between e-cigarette users and conventional cigarette users. Authors found that average length of a puff taken from an e-cigarette was significantly longer than that of tobacco

1 users (4.3 seconds vs. 2.4 seconds, respectively) and there was a wide range in puffing duration
2 for e-cigarettes (2 to 8.3 seconds).(Hua et al., 2013b)

3 Quality of product functioning and performance is highly variable and
4 inconsistent,(Trtchounian and Talbot, 2011) and users can modify many of the products. In
5 addition, as the types and design of products and their contents continue to evolve rapidly, it is
6 increasingly difficult to determine what an e-cigarette "is," what it may contain, and what it is
7 delivering to the user and the surrounding environment. The rapid and continual evolution of
8 products makes it difficult to conduct research on the products and generalize study findings to
9 all products because they may become quickly outdated.

10 The first e-cigarettes were cigarette-shaped, plastic or metal devices comprising three
11 parts: a battery, a reservoir for e-cigarette solution (usually containing nicotine) often with a
12 fibrous material on which the solution is placed, and a heating element (sometimes referred to as
13 an atomizer) which attaches to the battery and converts the liquid into an aerosol (Figure 1). In
14 subsequent models the cartridge was called a cartomizer, which combined the e-liquid reservoir
15 with the wick/fiber and heating element into a single unit (Figure 2). The cigarette-shaped and
16 sized devices are often called "mini" e-cigarettes or "cig-a-likes" by users (who often call
17 themselves "vapers"). There are disposable and rechargeable e-cigarette models (Figure 2). More
18 recent designs are larger models that are pen-shaped and sized with cartomizers (Figure 2) that
19 often hold more nicotine solution to reduce the amount of times a user needs to refill throughout
20 the day. Some cartridges, called clearomizers and "tank systems," hold several ml of e-liquid, are
21 transparent, and allow the user to monitor the level of fluid they contain. There are also much
22 larger capacity and technologically sophisticated tank system devices (Figure 2) that have
23 various mechanical and/or digital display features. One such feature is a larger metal casing for
24 the batteries, which is able to be opened and the batteries replaced according to user preferences.
25 In some tank devices the heating elements and batteries can be replaced with more powerful
26 batteries or lower electrical resistance heaters that allow the user to control how the e-liquid is
27 vaporized (these devices are often referred to as variable voltage devices by users). Furthermore,
28 since the first e-cigarette products appeared on the market, users have been modifying the
29 devices and creating their own; instructions to do so are widely available on the Internet on e-
30 cigarette forum sites and YouTube. A concerning trend that has been occurring at least in the
31 U.S. and is owed largely to the refillable nature of e-cigarettes, is the use of the devices to smoke

Product	Description	Some Brands
Disposable e-cigarette 	Cigarette-shaped device consisting of a battery and a cartridge containing an atomizer to heat a solution (with or without nicotine). Not rechargeable or refillable and is intended to be discarded after product stops producing aerosol. Sometimes called an e-hookah.	NJOY OneJoy, Aer Disposable, Flavorvapes
Rechargeable e-cigarette 	Cigarette-shaped device consisting of a battery that connects to an atomizer used to heat a solution typically containing nicotine. Often contains an element that regulates puff duration and /or how many puffs may be taken consecutively.	Blu, GreenSmoke, EonSmoke
Pen-style, medium-sized rechargeable e-cigarette 	Larger than a cigarette, often with a higher capacity battery, may contain a prefilled cartridge or a refillable cartridge (often called a clearomizer). These devices often come with a manual switch allowing to regulate length and frequency of puffs.	Vapor King Storm, Totally Wicked Tornado
Tank-style, large-sized rechargeable e-cigarette 	Much larger than a cigarette with a higher capacity battery and typically contains a large, refillable cartridge. Often contains manual switches and a battery casing for customizing battery capacity. Can be easily modified.	Volcano Lavatube
Figure 2. Examples of different e-cigarette products		

1

2 marijuana in the form of a liquid and wax dabs (a concentrated form of marijuana, mainly

3 comprising THC).(Givens and Cheng, October 11, 2013, Shuman and Burns, May 24, 2013)

4 E-liquids are offered in a variety of flavors. A content analysis of 59 e-cigarette websites

5 conducted in 2012,(Grana and Ling, in press) e-cigarettes and the nicotine solution were found to

6 come in tobacco (95%), menthol (97%), coffee (61%), fruit (73%), candy (71%) and alcohol

7 (10%) flavors, as well as more unusual flavors such as “cola” and “Belgian waffle.” Flavor is an

8 important product characteristic in determining who is attracted to a product and the ability to get

9 started on a product. The 2012 US Surgeon General’s Report, Preventing Tobacco Use among

10 Adolescents and Young Adults, found that flavored tobacco products are disproportionately used

11 by youth and initiators (U.S. Department of Health and Human Services, 2012). Since flavors

1 play a key role in promoting youth tobacco use, cigarettes with these characterizing flavors (with
2 the exception of menthol) have been banned in the U.S. and a flavor ban on nicotine containing
3 products (which includes e-cigarettes) was included in the proposed revision of the EU Tobacco
4 Products Directive (TPD) produced by the European Commission. On 8 October 2013 the EU
5 Parliament deleted this provision, which would allow flavored e-cigarettes (European
6 Parliament, 2013). As of November 2013 there were ongoing negotiations between the
7 European Parliament, the European Council and the European Commission over the final
8 wording of the TPD. To the best of our knowledge, there were no restrictions on flavored e-
9 cigarettes anywhere in the world.

10 11 **PRODUCT PERFORMANCE AND POTENTIAL RISKS TO USERS AND** 12 **BYSTANDERS**

13 E-cigarette devices are manufactured mainly in China. There are concerns about risks
14 posed by e-cigarette and e-cigarette solution. Trtchounian and Talbot (2011) examined 6 brands
15 of products for design, content, labeling, quality and product information including
16 warnings.(Trtchounian and Talbot, 2011) Most of the e-cigarette starter kits purchased came with
17 some instructions. Most provided information about the battery and how to connect the parts of
18 the devices, but did not come with a list of product ingredients, or health warning messages.
19 Most of the products leaked when handled and cartridges came with fluid leaked on them,
20 creating the potential for dermal nicotine exposure and potential nicotine poisoning.(Trtchounian
21 and Talbot, 2011)

22 Propylene glycol and glycerin comprise the main base ingredients of the e-liquid and
23 helps to generate the aerosol used to deliver nicotine and other compounds to the user. This
24 aerosol looks like smoke. There is concern about potential health effects of chronic inhalation of
25 the vaporized base components of the e-liquid.

26 As first summarized in the report on electronic cigarettes produced by the German
27 Cancer Research Center in 2013,“Electronic Cigarettes – An Overview,” these chemicals are
28 approved for ingestion in food, cosmetics and some drug preparations by many government
29 regulating agencies (U.S., E.U.(German Cancer Research Center, 2013)). Ingestion is a different
30 mode of administration than inhalation so these safety decisions may not be relevant to e-

cigarette use. Glycerin (also called glycerol), is also approved for use in food and cosmetics, is also not explicitly approved for human inhalation.(German Cancer Research Center, 2013)

Regarding inhalation, a Master Data Safety Sheet, guidance for the industrial use of propylene glycol by Sciencelab.com, Inc., states it can cause eye and respiratory irritation and "Prolonged or repeated inhalation may affect behavior/CNS (with symptoms similar to ingestion), and spleen."(Sciencelab.com Inc., 2013)A major manufacturer of propylene glycol, the Dow Chemical Company, states in its product safety materials that the "inhalation exposure to [propylene glycol] mists should be avoided"(Dow Chemical Company, 2013) and the American Chemistry Council warns against its use in theater fogs due to its potential to cause eye and respiratory irritation.(The American Chemistry Council, July 2001) When heated and vaporized, propylene glycol can form propylene oxide, an IARC class 2B carcinogen.(Laino T et al., 2012) and glycerol forms acrolein, which can cause upper respiratory tract irritation.(U.S. EPA, Henderson TR et al., 1981)

Major injuries and illness have resulted from e-cigarette use, which may be related to lack of basic safeguards in the product design and manufacturing process, as well as the contents of the solution. Tobacco product adverse events can be reported to the Food and Drug Administration (FDA), Center for Tobacco Products (CTP). Chen (2012) summarized the 47 adverse event reports filed with the FDA CTP between 2008 and early 2012 regarding e-cigarettes; finding that 8 of these 47 adverse events were serious health issues with examples including hospitalization due to congestive heart failure, hypotension, pneumonia, chest pain and "possible infant death secondary to choking on e-cig cartridge."(Chen, 2013) Reporting of an adverse event does not indicate causation, but it does raise questions of biological plausibility that need to be addressed. Examples of less serious adverse events include nausea, vomiting and sore throat. Moreover, one e-cigarette company also instructs users to draw on the product differently from a cigarette because they might experience adverse reactions, stating: "If you find yourself smoking your e-cigarette the way you smoke a traditional cigarette, you are doing something wrong. **As a matter of fact, if you vape your e-cig as you smoke your cigarette you will find yourself with a sore throat, sore lungs, an incessant cough and irritation in your mouth and throat.**[bold in original]"(Metro E-cigarette Website)

An 18-month old girl in the U.S. became seriously ill after drinking e-cigarette liquid in a refill container that was left in the child's reach and did not come with a child-proof cap.(Shawn

1 and Nelson, 2013) A child in Israel died of nicotine poisoning from drinking her grandfather's
2 e-cigarette solution.(Winer, May 29, 2013) e-cigarettes have exploded and caught fire, causing
3 serious injury. A man in Florida suffered severe burns and lost half his tongue due to an e-
4 cigarette battery exploding in his face.(CBS NEWS, February 16, 2012) A woman in Atlanta
5 escaped serious injury from an e-cigarette that exploded in her home, starting a fire.(Strickland,
6 2013) These problems are common enough that e-cigarette internet forums and some retail
7 websites advise that the lithium batteries may explode or overheat when left to charge for long
8 periods of time or in direct heat exposure or if charged with the wrong charger or a powerful
9 electrical source. An e-cigarette forum (www.e-cigarette-forum.com) has a section in which
10 advice is given about the risks of specific battery types.(E-cigarette-forum) Because e-cigarette
11 are not regulated there is no systematic collection of information on these issues, which is likely
12 to result in under-reporting. It is also unknown to what extent these problems could be eliminated
13 by stronger regulatory standards on the product itself.

14

15 **MARKETING AND MEDIA RESEARCH**

16 While most attention from the biomedical community has been on the e-cigarette device,
17 the aerosol that it delivers to users (and, to a lesser extent, bystanders), and the potential of e-
18 cigarettes for cessation of conventional cigarettes, much of the public discourse and popular
19 understanding about use of e-cigarettes has been determined by how they have been marketed
20 and covered in the news media. In order to understand patterns of product use, it is important to
21 understand the marketing claims promoted to the public about e-cigarettes and how products and
22 marketing is designed to attract different segments of the population (such as never users of
23 nicotine or tobacco products, youth, current smokers, and former smokers). Consumer
24 perceptions of the risks and benefits posed by e-cigarettes, both independent risks and relative to
25 cigarettes and other tobacco products, are important factors in determining uptake and
26 consequently the total public health burden due to tobacco use. For example, claims that e-
27 cigarettes are less harmful than cigarettes may encourage adoption by non-smokers (potentially
28 children) as well as smokers seeking to quit conventional cigarettes. Promotion of e-cigarettes as
29 a convenient alternative to cigarettes when a smoker cannot light up would blunt the effect of
30 smokefree laws on smoking cessation. The explicit promotion of dual use (as has also been done

with snus) for places where people cannot smoke cigarettes (Figure 3) has important implications for the ultimate use patterns and health impact of introducing e-cigarettes into the marketplace.

Grana and Ling (in press) systematically reviewed a sample of single-brand e-cigarette retail websites (n=59) that were online in 2012 to determine the main marketing messages, type



Figure 3. Examples of marketing claims to use e-cigarettes to “smoke anywhere” and “circumvent smokefree laws” (www.smokingeverywhere.com; www.elitensmoke.com) June 2012

of products sold and unique marketing features on the sites.(Grana and Ling, in press) They found that the most popular claims were that the products are healthier (95%), cheaper (93%) and cleaner (95%) than cigarettes, can be smoked anywhere (88%), can be used to circumvent smokefree policies (71%), do not produce secondhand smoke (76%), and are modern (73%). Health claims were also made through pictorial and video representations of doctors, which were present on 22% of sites. Cessation-related claims (ranging from overt statements that one can use the product to quit smoking to indirect claims such as "you'll never want to smoke tobacco cigarettes again") were found on 64% of sites. Claims about effects on bystanders frequently included statements that e-cigarettes emit "only water vapor" that is harmless to others.

Another more subtle way e-cigarettes are presented as a healthier option than conventional cigarettes on e-cigarette-related websites is through information and claims about nicotine.(Tobacco Vapor Electronic Cigarette Association) When mentioning that the products contain nicotine, sites often offer information that nicotine is not the harmful substance in cigarettes. In addition, information about the characteristics of nicotine is presented in a misleading way, with sites presenting nicotine as derived from plants other than tobacco, including eggplant and tomatoes, where the levels are so low that it would require eating pounds a day to take in nicotine in amounts to rival that of nicotine from a secondhand smoke exposure, and also presenting positive aspects of nicotine use on cognition.

Some e-cigarette websites (as well as some scientific commentators)(Phillips and Rodu, Britton, 2013) trivialize the addictive properties of nicotine by comparing it to caffeine. For example, one e-cigarette shop website includes this information in a section called "About the E-Cig:"

Is Nicotine harmful?

Nicotine is not the harmful ingredient in tobacco, it is the smoke that kills: the smoke and combustion artefacts cause lung cancer, heart disease and many other illnesses. Also, everyone tests positive for nicotine in the bloodstream, in very small amounts, since it is a common ingredient in vegetables. A related material, nicotinic acid, is a vitamin Niacin or Vitamin B3 so to say it is universally harmful is obviously untrue. Without the smoke, smoking is likely to be far less harmful, as nicotine may be as harmful as the caffeine in coffee. Nicotine is best avoided by those who are pregnant or have heart disease. You may want to avoid it if you also do not take caffeine or alcohol by drinking coffee, tea, wine or beer. Like these substances, it should probably not be started in the first place. Some people however find their lives are dysfunctional without nicotine, and an electronic cigarette is probably as good a way as any to supply it. www.itisvapor.com, Last accessed November 24, 2013

1
2 While nicotine is not the only or most dangerous thing in conventional cigarette smoke,
3 claims that nicotine is harmless is not supported by the scientific evidence as summarized in the
4 1988 Surgeon General's Report on *The Health Consequences of Smoking: Nicotine Addiction*,
5 addressed this comparison directly:

6 Most categories of drugs which have been found to cause widespread drug dependence in
7 the nonlaboratory setting have been tested with animals and humans in laboratory
8 settings. Results of these studies have been reviewed in detail elsewhere. Several
9 categories of drugs have been found to be self-administered by humans and animals in
10 the laboratory settings, to meet criteria as positive reinforcers, and to exhibit orderly
11 relations as a function of drug dose, drug pretreatment, and other factors known to affect
12 the intake of dependence-producing drugs. These include alcohol, morphine,
13 pentobarbital, amphetamine, cocaine, and nicotine in the forms of cigarettes and i.v.
14 injection.

15
16 Self-administration studies with animals are much more extensive and have also
17 been reviewed in detail elsewhere. In brief, drug self-administration studies in animals in
18 the 1960s showed that a range of drugs including opioids, amphetamines, barbiturates,
19 certain organic solvents, alcohol, cocaine, and nicotine were self-administered. All of
20 these drugs were found to maintain powerful chains of drug-seeking behavior, even when
21 insufficient drug was taken to produce a clinically significant degree of physical
22 dependence. *Drugs that did not serve as reinforcers in these studies included caffeine...*
23 [emphasis added, citations deleted](U.S. Department of Health and Human Services,
24 1988)
25

26 It is not reasonable to state or imply an equivalence between nicotine and caffeine.

27 The use of celebrities in product marketing has been occurring since at least 2009.(Grana
28 et al., 2011) In Poland, a popular ad (as of March 2012) featured a famous actor with the tagline
29 'You can smoke wherever you want.' In the U.S., Katherine Heigl, a famous U.S. actress went
30 on the David Letterman Show, a popular late night program in the U.S. and spent much of her
31 interview discussing her quit attempt with the e-cigarette and even used an e-cigarette on stage
32 with Mr. Letterman (Figure 4). At the time, she had a relationship with the company where a
33 portion of sales of an e-cigarette called the Pitbull were donated to a charity of her choice,
34 Compassion Revolution. The video of the interview with David Letterman was on the site as
35 well as posted on other websites and widely used in many online press releases and advertorials.

36 Rooke and Amos (2013) conducted a thematic analysis of newspaper and online media
37 coverage about electronic cigarettes in the UK and Scotland from July 2007 to June 2012 (n=119
38 articles, editorials and columns; 44 from July 2007- June 2010, 75 from July 2010- July



Figure 4. Katherine Heigl smoking an e-cigarette on the set of the David Letterman Show, a popular late-night national television program in the United States, September 2009)

1
2 2012).(Rooke and Amos, 2013) Five themes emerged: "healthier choice" (71 articles), "getting
3 around smokefree" (44 articles), "celebrity use" (41 articles), "price" (41 articles), and "risk and
4 uncertainty" (31 articles). They found that the articles published earlier focused on e-cigarettes as
5 a way to circumvent clean indoor air policies, with the healthier choice theme appearing as an
6 aside. Authors noted that the smokefree-themed articles were "rebellious" in tone and presented
7 e-cigarettes as a way to "beat" smoking bans and give users the "freedom to smoke where [they]
8 want." The healthier choice theme increased as a main focus of articles over the years included
9 in the study, with e-cigarettes presented as posing less risk to tobacco cigarettes and potential for
10 use as a smoking cessation aid. Authors noted that the healthier choice claims were often
11 presented as a defense to issues of potential risk and uncertainty about the products, focusing on
12 them as a healthier alternative for smokers and for use in quitting smoking. Potential risks related
13 to lack of product and safety information were usually raised by health officials and included
14 concerns about the poisonous nature of nicotine and risks of accidental overdose or ingestion by
15 children. However, authors note that the "healthier" themed articles also focused on e-cigarettes

1 as part of "safer cigarette" development by the tobacco industry and as part of the concept of
2 tobacco harm reduction, noting that the coverage "suggested official backing for e-cigarettes and
3 highlighted their 'potential to save lives.'" Stories about celebrity use of e-cigarettes appeared
4 after 2009, focusing on e-cigarettes as the latest stylish, "must-have" item and often emphasizing
5 use of the products to get around smokefree laws and to quit smoking. Coverage often included
6 anecdotes about having tried nicotine replacement therapies (NRT), failing to quit and then
7 trying the e-cigarette, thus implying that e-cigarettes are a more effective form of NRT.
8 Specifically, the Katherine Heigl appearance on the David Letterman television program noted
9 above in Grana et al. (2011) is cited as an example in this article, demonstrating its widespread
10 reach through news and marketing channels and thus the widespread reach of the "cessation aid"
11 message.(Grana et al., 2011)

12 An innovation that e-cigarette companies have employed since their advent is web-based
13 affiliate marketing (e.g., third-party product promotion that leads to sales, often disguised as a
14 press release or news article). Cobb et al.(2013) performed a forensic analysis of e-cigarette
15 Internet marketing practices in order to track the links between affiliate advertising, affiliate
16 marketing sites and the retailer websites selling the products and to compare the therapeutic
17 (smoking cessation) claims on the affiliate marketing and the seller's website.(Cobb et al., 2013)
18 The analysis revealed that affiliate marketing contained therapeutic claims while the retailer
19 website linked to the affiliate did not. A brief descriptive analysis of 20 websites documented
20 that 12 had affiliate programs, 11 made health claims and 4 made cessation claims.(Cobb et al.,
21 2013) Current legal precedent in the U.S. classifies e-cigarettes as tobacco products unless they
22 are marketed with therapeutic claims and many retail website contain a disclaimer usually in fine
23 print at the bottom of the homepage or in the FAQ section that the products are not intended to
24 treat disease or not intended for smoking cessation.

25 Another innovation employed effectively by e-cigarette marketers and retailers is the use
26 of social media and viral video sharing. In an analysis of e-cigarette-related Youtube videos
27 (n=396) posted from 2007-2011, Paek et al. (2013) found that 85.2% of videos had a clear
28 sponsorship by e-cigarette companies or their affiliate marketers.(Paek et al., 2013) Despite the
29 industry sponsorship, 79% appeared to be user-generated and only 17% were formal
30 advertisements or news clips. The videos communicated health and smoking cessation claims,
31 with 21.4% presenting e-cigarettes as "less harmful than other tobacco products," 12% claiming

1 they are “healthy,” and 9.3% “can help you quit smoking;” but non-marketer sites presented
2 significantly more health claims than marketer videos. A high level of information about the
3 product was presented in the videos indicating the use of common retailer marketing tactics
4 (product (68%), price (34%), place (65.5%), brand-specific taste (39.5%) and design (18.9%)).
5 In an analysis of viewer preferences, the number of “likes” on each video was counted at time of
6 download and a hierarchical regression was conducted to determine significant predictors of
7 number of likes. Number of views was the strongest statistically significant predictor of likes
8 ($p<.001$), and more weakly associated variables were “not having an obvious advertising
9 message” ($p=.05$), “presented a social benefit” ($p=.05$), and those had a “positive valence”
10 ($p<.01$).

11 In the only published study as of November 2013 on the effects of viewing e-cigarette
12 television advertising on adult smokers and recent quitters ($n=519$) in an online convenience
13 sample, Kim et al. (2013) found that after viewing a popular TV commercial for Blu e-cigarettes
14 75.8% of the sample reported the ad made them think about smoking, 74.3% reported it made
15 them think about quitting and 66% said it made them likely to try e-cigarettes in the future.(Kim
16 et al., 2013) In addition after viewing the ad, participants mean reported urge to smoke was
17 42.1($SD=1.9$) on a 100 point scale from “no urge” to the “strongest urge I have ever
18 experienced”). Persons who had used e-cigarettes (34% of the sample) were statistically
19 significantly more likely to think about smoking cigarettes after viewing the ad than non-users
20 (82.7% and 72.2%, respectively). There were no statistically significant differences in urge to
21 smoke and thinking about quitting for e-cigarette ever-users vs. non-users.

22 While originally promoted almost exclusively on the internet, marketing activities for e-
23 cigarettes have increased dramatically, with the increasing promotion of e-cigarettes on
24 television in some countries (e.g., U.S., U.K.). In the U.S. television advertising is largely by
25 Lorillard, Inc., a multinational tobacco company based in the U.S. and the first of the cigarette
26 companies to enter the e-cigarette business when it purchased Blu brand e-cigarette in
27 2012(Esterl, April 25, 2012) and the U.K. brand of e-cigarettes, Sky Cig, in 2013.(Esterl,
28 October 1, 2013) As of late 2013, Lorillard has one of the largest U.S. national TV campaigns,
29 which includes use of celebrities to glamorize e-cigarettes and shows them inhaling and exhaling
30 what looks like smoke. Also, in the U.S., the e-cigarette company NJOY aired a commercial in a
31 regional television market during the 2013 National Football League Superbowl game.(Hodge Jr.

1 et al., 2013) In the U.K. the commercials range from showing young people out enjoying
2 themselves (SkyCig) to older people who are tired of missing out on major life events due to
3 their smoking (E-Lites), a sentiment more associated with the harm reduction or NRT approach.
4 Jenny McCarthy, a TV host and model, appears in a 2013 Blu advertisement that glamorizes e-
5 cigarette use and emphasizes the romantic opportunity it could create (Figure 5). Moreover, this
6 advertisement is set in a bar which recalls the pairing of cigarettes and alcohol and makes that
7 connection for e-cigarettes, and is likely to appeal to older adolescents and young adults, the
8 population that spends disproportionately more time out in bars trying to develop romantic
9 relationships. Blu also has another actor in its commercials, Stephen Dorff, whose rugged good

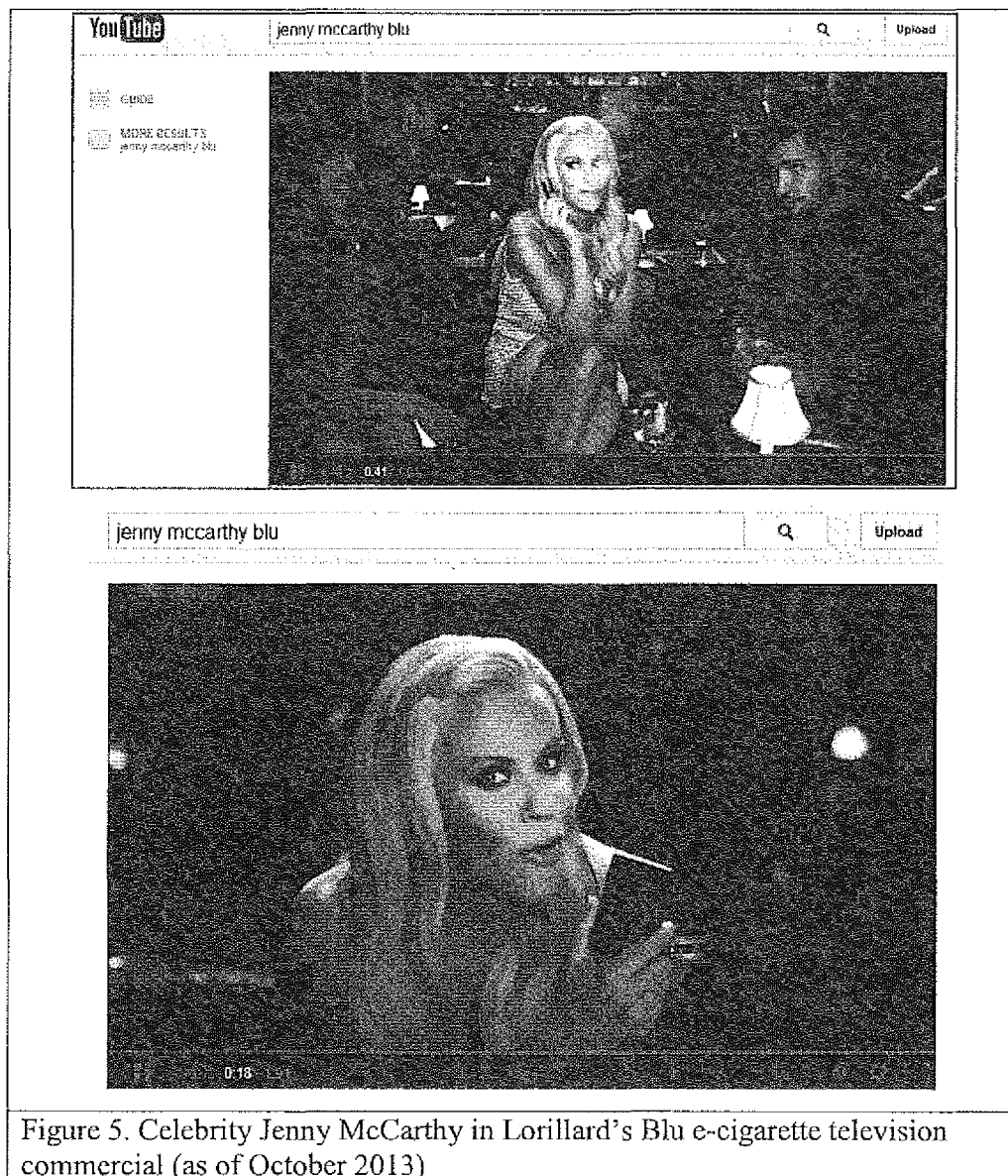


Figure 5. Celebrity Jenny McCarthy in Lorillard's Blu e-cigarette television commercial (as of October 2013)

1 looks recall the Marlboro Man but in a suit, and e-cigarette brand NJOY uses rebel rockstar
2 Courtney Love.(BluCigs, 2012)

4 **Conclusion**

5 As of 2013, e-cigarette companies (including cigarette companies who have purchased e-
6 cigarette companies) are marketing e-cigarettes using some of the same claims, tactics and media
7 channels – including television and radio -- that were effective at marketing cigarettes to attract
8 young people and deter smokers from quitting before use of these channels to market cigarettes
9 was banned.

10 The fact that a large majority of e-cigarette retail websites encouraged the use of the
11 products anywhere and everywhere (88%), specifically noting places where cigarette smoking
12 would be banned (71%) and places for socializing, has direct implications for regulation of e-
13 cigarettes and implementation of the FCTC. These messages can be used to undermine the idea
14 of smoking restrictions and existing smokefree laws designed to apply to tobacco smoke.
15 Importantly, it appears that both the e-cigarette companies and tobacco companies are focused on
16 creating positive social norms for the products, encouraging their use "anywhere" and promoting
17 them explicitly to get around smokefree laws (which are effective tobacco control measures), and
18 promoting their use as socially acceptable. The totality of the messaging creates familiarity
19 among smokers by emphasizing the similarity to a cigarette and the smoking experience while
20 simultaneously assuring the smokers and their family and friends (and perhaps kids) that it is
21 entirely different than a cigarette. A 2013 commercial for e-cigarettes, FIN, comes with the
22 tagline "Rewrite the Rules," and a direct quote from the commercial states, "There was a time
23 when no one was offended by it – that time has come again."(FIN Electronic Cigarettes, May 25,
24 2013)

25 Television and radio have been unavailable to the cigarette and other tobacco companies
26 to market their products in the US (as well as much of the world) since the 1970s. E-cigarette
27 advertising on television and radio is mass marketing of an addictive nicotine product for use in a
28 recreational manner to new generations who have never experienced such marketing. This
29 pervasive marketing may have implications for existing smokers as well as the one published
30 study on this topic indicates that viewing an e-cigarette commercial may induce thoughts about
31 smoking and cue the urge to smoke among adult smokers.(Kim et al., 2013)

1 **PREVALENCE**

2 **Adults**

3 ***International Samples***

4 The Eurobarometer survey in 2012 (n=27 countries, n=26,751) assessed awareness,
5 attitudes toward and prevalence of ever-using e-cigarettes in the European Union.(TNS Opinion
6 & Social, 2012) Male and younger aged respondents had the greatest awareness of e-cigarettes.
7 The greatest awareness was in Finland (92%) and Greece (90%) while the lowest was in Sweden
8 (34%). In general, more Europeans in this survey were unsure if they think e-cigarettes were
9 harmful to health (38%) or think that they are not harmful to health (35%) than thinks they are
10 harmful to health (27%). Seven percent of European Union respondents have tried e-cigarettes at
11 least once, with the highest rate of trial in Bulgaria (11%), Latvia (10%), Denmark (9%), Poland
12 (9%) and the Czech Republic (9%) and highest rate of regular use in Greece, Denmark and
13 Romania (each 2%).

14 Adkison and colleagues (2013) estimated rates of e-cigarette use and perceptions of the
15 products in 2010 among current and former smokers in the International Tobacco Control Study
16 conducted in U.K, U.S., Australia and Canada.(Adkison et al., 2013) Likely reflecting the fact
17 that e-cigarettes are freely available in the UK and US and not legal for sale with nicotine in
18 Australia and Canada, the highest rates of awareness were in the U.K.(54%) and U.S. (73%),
19 while rates were lower in Australia (40%) and Canada (20%) (all rates were statistically
20 significantly different). Prevalence of e-cigarette trial (among those aware) was 20.4% in U.S.,
21 17.7% in the U.K., 10% in Canada and 11% in Australia. Across countries use was higher
22 among those of younger age, higher income, reporting nondaily smoking and who perceive e-
23 cigarettes as less harmful than cigarettes. Despite larges differences in awareness among the
24 countries, current use did not differ among the countries (p=0.114). In current smokers, a marker
25 of dependence (cigarettes per day) was not associated with ever e-cigarette use or past 30-day
26 use (p value not provided).

27

28 ***United Kingdom***

29 Dockrell et al (2013) analyzed data from a nationally representative survey of UK adults
30 (2010: n=12597 adults, 2297 smokers; 2012 n=12432, 2093 smokers) finding the prevalence of
31 e-cigarette trial and current use doubled from 2010 to 2012.(Dockrell et al., 2013) Ever use in

1 2010 was not measured among former smokers or never smokers, only current non-daily or daily
2 smokers. In 2010, 5.5% of smokers had tried e-cigarettes but no longer used them, which
3 increased to 15.0% in 2012. Current use of e-cigarettes among smokers rose from 2.7% in 2010
4 to 6.7% in 2012. Ever e-cigarette use among former smokers in 2012 was 2.7% and current use
5 1.1%; ever use among never smokers in 2012 (only measured in that year) was 0.4% and current
6 use was 0.1%. About 33% of ever e-cigarette users continued to use in 2010 and in 2012. In a
7 multivariate model which included only ex- and current smokers, being an occasional (OR=4.32
8 95% CI: 2.89, 6.48) or daily smoker (OR=7.33 95% CI: 5.66, 9.48) increased odds of ever e-
9 cigarette use compared to ex-smokers, while older age (age ≥ 35) decreased odds of ever e-
10 cigarette use compared to 18-34 year olds (OR=0.58 95% CI: 0.43, 0.78). In the model for
11 current e-cigarette use, only being an occasional (OR=6.04 95% CI: 2.92, 12.49) or daily smoker
12 (OR=6.68 95% CI: 4.15, 10.77) increased odds of current e-cigarette use. Authors also analyzed
13 data from a 2010 survey of smokers (n=1308) that included a special battery of e-cigarette
14 questions. A majority of respondents reported that e-cigarettes: “might satisfy the desire to
15 smoke” (60%), “might help cut down on cigarettes” (55%), and “they might help me give up
16 smoking entirely (51%).” Perceived disadvantages included “might be too expensive” (53%),
17 “might not satisfy the desire to smoke enough” (39%), and might be mistaken for cigarettes
18 therefore frowned upon in public” (35%). Among e-cigarette triers (n=494, 37.7% of sample), the
19 most common reason for trying e-cigarettes was “as a substitute for smoking where smoking is
20 not allowed” (reported by 49% of daily pack a day smokers, 43% of those smoking 10-19
21 cigarettes per day, and 31% among those smoking 9 or fewer cigarettes per day, $p=0.008$).
22 Secondary reasons were to cut down (35%) and to quit smoking (31%). The finding that using e-
23 cigarettes to get around smokefree laws is likely reflected in the dominant pattern of dual use in
24 both 2010 and 2012 prevalence data reported in this study.

25

26 *Switzerland*

27 Douptcheva et al (2013) reported preliminary data analyses of the Cohort Study on
28 Substance Use Risk Factors (C-SURF), a longitudinal study of Swiss men who are interviewed
29 during enrollment in the army, to examine prevalence and predictors of e-cigarette
30 use. (Douptcheva et al., 2013) Among the entire cohort of young men, aged 19-25, 4.9% of
31 participants reported ever trying e-cigarettes. Use differed by smoking status with 9.3% of

current smokers reporting trying e-cigarettes, 1.6% of former smokers and 0.4% of never smokers. Excluding 144 occasional e-cigarette users, they conducted an analysis of e-cigarette use among daily smokers (n=1233) that compared daily dual users (n=25) to daily smokers who never use e-cigarette (n=1064); they found no statistically significant differences in cigarettes per day, nicotine dependence or past year quit attempts.

United States

Using data from U.S.-based ConsumerStyles survey (which is a mail-back survey of a national sample of adults), Regan et al. (2013) found that awareness of e-cigarettes doubled from 2009 to 2010 (16.4% to 32.2%) and ever use of e-cigarettes increased from 0.6% in 2009 to 2.7% in 2010.(Regan et al., 2013) Ever use was most common among men, younger adults and those with lower socioeconomic status. Ever use was higher among smokers than among the general population in 2010 (18.2% v 2.7%, respectively). Current smokers who had tried e-cigarettes did not differ from non-users in intention to quit or past-year quit attempts.

King et al (2013), analyzed data from a companion dataset to the ConsumerStyles, called HealthStyles, collected in 2010 (mail-based and web-based modalities) and 2011 (web-based mode).(King et al., 2013) They found awareness of e-cigarettes had increased from about 40% to about 58% and ever use had doubled from 3.4% to 6.2% between 2010 and 2011. Ever use was higher in current smokers at both waves (6.8% of the 2010 mail-based sample, 9.8% of the 2010 web-based sample and 21% of the 2011 web-based sample). Ever use among former smokers increased dramatically from 2010 to 2011, from 0.6% in 2010 mail sample and 2.5% in 2010 online sample to 7.4% in the 2011 online sample. Authors note data were weighted to be nationally-representative and the Styles surveys typically yield estimates of smoking prevalence that are almost identical to the nationally-representative National Health Interview Survey.(Regan et al., 2013, King et al., 2013) Moreover, a similar percentage of U.S. adults who were aware of e-cigarettes in 2010 were reported by Regan et al and King et al., as the nationally-representative 2010 data reported in Pearson et al. (Pearson et al., 2012) (32.2% Regan,(Regan et al., 2013) 38.5% and 40.9% in King(King et al., 2013) vs. 40.3% in Pearson(Pearson et al., 2012).

Pearson et al (2012) estimated e-cigarette use prevalence in two studies, the Legacy Longitudinal Study of Smokers (LLSS) and a nationally-representative general population online

1 survey, both conducted in 2010.(Pearson et al., 2012) Smokers in the LLSS and the nationally
2 online sample were similar on all demographics except age (those in the LLSS were on average
3 younger) and smoking characteristics and desire to quit with the exception that a greater
4 proportion of smokers in the LLSS had made more than one quit attempt (69% v 31%,
5 respectively). Overall awareness in the online nationally-representative sample (n=2649) was
6 40.2% and ever use was 3.4%, while awareness among smokers was 57% and ever use was
7 11.4%. Among LLSS cohort (n=3648), awareness was 57.0% and ever use was 6.4%. Moreover
8 in the online sample, almost all current use (past 30-day) of e-cigarettes was among current
9 smokers: 4.1%, compared to 0.5% of former smokers and 0.3% of never smokers. (Current use
10 was not measured in the LLSS.) In addition, although a low percentage of former smokers (2%)
11 had used e-cigarettes, that rate was over twice the rate among never smokers (0.77%).In the
12 online nationally-representative survey the odds of being an e-cigarette user was associated with
13 intention to quit in the next 6 months (adjusted OR = 1.74; 95% CI: 1.02, 2.98), compared to
14 never expecting to quit; but this was not evident in the LLSS cohort.

15 In a 2010 nationally-representative, mixed-mode survey (telephone-based n=1504, online
16 n=1736; total n=3240), McMillen et al. (2012) assessed the ever use of emerging tobacco
17 products including e-cigarettes among adults in the U.S.(McMillen et al., 2012) Ever use of e-
18 cigarettes among all respondents was 1.8%, with highest rates of use among daily (6.2%), and
19 non-daily (8.2%) smokers. Past 30-day (current) e-cigarette use did not exceed 1% for any of the
20 “emerging tobacco products, which included e-cigarettes, but 19.7% of ever e-cigarette users
21 reported past 30-day use.

22 Popova and Ling (2013) found that among a nationally representative panel of current
23 and recent former smokers, 20.1% had ever used e-cigarettes.(Popova and Ling, 2013) Ever e-
24 cigarette use was more common in women than men (OR=0.79, 95% CI: 0.63-0.99), persons of
25 Asian ethnicity than white (OR=2.76, 95% CI: 1.03, 7.39), and those aged 18-29 years compared
26 to 60 years or older (OR=2.32, 95% CI: 1.57, 3.42). Among smokers, those with some college
27 education compared to those with a bachelors degree (OR=2.09; 95% CI: 1.13, 3.86) and those
28 with incomes less than \$15,000 compared to those with incomes of \$60,000 or greater were more
29 likely to be current (past 30-day) e-cigarette users (OR=1.95, 95% CI: 1.17, 3.25). Respondents
30 who had ever tried e-cigarettes were significantly more likely to have tried to quit conventional

cigarettes in the past year and failed than persons who had not tried to quit (OR=1.78, 95% CI: 1.25, 2.53).

U.S. Regional Samples

Choi and Forster (2013) found that among young adults aged 20-28 in the Midwestern US surveyed in 2011, ever use of e-cigarettes was 7.0% and past 30-day use was 1.2%.(Choi and Forster, 2013) Among those aware of e-cigarettes, most believe e-cigarettes are less harmful than conventional cigarettes (52.9%) and 44% believe they can help with quitting smoking. Ever use was more common among 20-24 year olds (25-28 year olds), men, current smokers, and those who believe e-cigarettes are less harmful than conventional cigarettes and can be used for in smoking cessation. In a focus group study more broadly focused on young adult perceptions of novel tobacco products that included e-cigarettes, Choi et al. (2012), found that about 50% of the sample of young adult smokers and non-smokers indicated interest in trying e-cigarettes if offered by a friend.(Choi et al., 2012)

Sutfin and colleagues (2013) found that among college students in North Carolina surveyed in 2009, ever use of e-cigarettes was 4.5% while past 30-day use was 1.5%, with highest use among current smokers.(Sutfin et al., 2013) Importantly, they found that 12% of e-cigarette users were never smokers. E-cigarette use was not associated with intention to quit smoking.

A cross-sectional study of Hawaiian daily smokers (n=1567) conducted from 2010-2012, examined e-cigarette use prevalence and associations with quitting attitudes and behaviors.(Pokhrel et al., 2013) Thirteen percent of participants reported having ever used e-cigarette to quit smoking (authors did not assess any other reason for using the products). Smokers who had used e-cigarettes to quit were younger, more highly motivated to quit, had greater self-efficacy for quitting, and reported a longer recent quit duration than smokers who had not used e-cigarettes to quit. In the multivariate logistic regression analyses, greater quit motivation (OR = 1.14; 95% CI: 1.08, 1.21), quitting self-efficacy (OR = 1.18; 95% CI: 1.06, 1.36) and having ever used FDA-approved therapies (OR = 3.72; 95% CI: 2.67, 5.19) were significantly associated with greater likelihood of having used e-cigarettes to quit smoking, whereas age (OR=0.98; 95% CI: 0.97, 0.99) and Native Hawaiian ethnicity (OR = 0.68; 95% CI: 0.45, 0.99) were inversely associated with greater likelihood of using e-cigarettes for quitting.

Convenience Samples of Users: Prevalence, User perceptions

There have also been several studies with convenience samples that may provide information about motivations for using e-cigarettes, attitudes and behavior. Due to study methodology, these studies were likely biased toward recruitment of persons motivated to quit and enthusiastic about e-cigarettes, limiting the generalizability of the findings.

In an online survey of 81 users of cessation websites and e-cigarette forums conducted in 2009, authors found that most respondents perceived the products as less harmful than cigarettes and used the products to quit smoking or to cut down on conventional cigarette smoking.(Etter, 2010) In a subsequent study conducted in 2010, Etter and Bullen (2011) surveyed 3587 adults from several countries that were recruited from e-cigarette forums and smoking cessation websites, and employed a similar questionnaire as Etter 2010.(Etter and Bullen, 2011b, Etter, 2010) Most respondents were former smokers (71%) at time of survey, using a nicotine e-cigarette (97%) and an average of 120 puffs/day. Top reasons for using e-cigarettes were: perceive them as less toxic than tobacco (84%), to help with quitting or relapsing (77%), to ameliorate cravings for and withdrawal from cigarettes (67%) for use in situations where smoking is restricted (39%) .(Etter and Bullen, 2011b) A subset of this sample who gave their email address for follow-up (n=779) completed a one-month (n=477) and a one-year follow-up (n=367) survey.(Etter and Bullen, 2013)As at baseline, a majority of participants at follow-up were former smokers (72%). Seventy-six percent of participants reported using e-cigarettes daily (17% were never users of e-cigarettes), and users took an average of 150 puffs/day and most commonly reported using 16 mg/ml nicotine strength e-liquids. A majority of people who were e-cigarette users at baseline remained e-cigarette users at one month and one year (98% at one month and 89% at one year among daily users. The relapse rate among former smokers who daily e-cigarette users at baseline was 6% by one-month follow-up and 6 percent by one- year follow-up. Of the daily smokers at baseline, 91% were still using e-cigarettes daily at one-month follow-up and 72% were using daily at one-year follow-up. Almost all of the former smokers using e-cigarettes daily at baseline were still using e-cigarettes daily at follow-up (99% at one-month and 92% at one-year). E-cigarette uptake was seen at follow-up among never-users of e-cigarettes at baseline (15% at one -month and 13% at one-year). Twenty-two percent of smokers (occasional and daily) at baseline had quit smoking at one-month and 46% had quit at one year. Authors note that respondents were older, higher income, more likely to be former smokers and

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March 3, 2014

Mayor Eric Garcetti
Members, Los Angeles City Council
via email

Dear Mayor Garcetti and Council Members,

I am writing to support pending legislation you are considering that would include e-cigarettes in Los Angeles' current smokefree ordinance. This is a sensible piece of legislation that mirrors what cities large and small are doing all over the country (and the world).

Last December two colleagues at UCSF and I prepared an extensive review of the scientific evidence at the request of the World Health Organization, "Background Paper on E-cigarettes (Electronic Nicotine Delivery Systems)" (copy attached).

While the scientific evidence is still accumulating, there is no question that e-cigarettes pollute the air breathed by bystanders with nicotine, ultrafine particles, volatile organic compounds, and other pollutants and that bystanders take these chemicals into their bodies. Having spent decades cleaning up the indoor air, there is no reason to reintroduce a new form of indoor air pollution.

In particular, it is my understanding that you have been provided with a technical report prepared for the e-cigarette advocacy group CASAA by Igor Burstyn entitled "Peering through the mist" that concludes that "there is no evidence that vaping produces inhalable exposures to contaminants of the aerosol that would warrant health concerns by the standards that are used to ensure safety of workplaces."

The problem with this study is that it employs occupational threshold limit values (TLVs) to evaluate the potential risks posed by various toxins in e-cigarettes. TLVs are used to assess health effects for occupational chemical exposures that are generally much higher (often orders of magnitude higher) than levels considered acceptable for ambient or population-level exposures. (Employing an occupational standard to evaluate risk to the general population is the same approach to risk assessment as those conducted for secondhand smoke by those affiliated with the tobacco industry decades ago, which also concluded that secondhand tobacco smoke could not produce any adverse health effects.) TLVs also do not consider exposure to sensitive subgroups, such as people with medical conditions, children and infants, who might be exposed to secondhand e-cigarette emissions, most notably nicotine. You should not rely on this study as justification for allowing the citizens of Los Angeles to be involuntarily exposed to e-cigarette pollution.

Another common claim is that e-cigarettes are helping people quit smoking and any restriction on where people can use e-cigarettes would undermine this benefit. The evidence from large population-based studies is just the opposite: overall e-cigarette use is associated with *less quitting* cigarettes. Moreover, even if the claims that e-cigarettes help people quit smoking were true, there is absolutely no evidence that creating e-cigarette zones would interfere with quitting smoking.

I am also very concerned about two exceptions in the legislation, one for theatrical productions and another for vaping lounges.

The seemingly minor amendment to exempt theatrical productions will have big effects given the fact that LA is a center for producing television programs and motion pictures, because it will make it legal to use ecigarettes in these venues, which could end up influencing youth all over the world to start using e-cigarettes and begin a life of nicotine addiction. And the e-cigarette companies have been very aggressive in using Hollywood to promote their products.

In terms of vaping lounges, it is important to ensure that *all* they are selling is e-cigarettes and associated paraphernalia and that they not be allowed to sell food or drink so as to prevent opening up a serious loophole in the law. Even better, I suggest that you consider grandfathering existing vaping lounges (as long as they only sell e-cigarettes) and prohibit opening new such businesses.

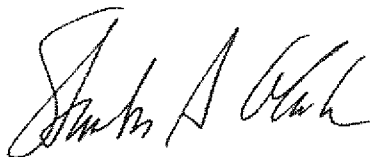
I had the privilege of appearing before the Los Angeles City Council decades ago when it was considering legislation to limit and, eventually, prohibit smoking in workplaces and public places. I have to say that the current debate over e-cigarettes makes me feel like I have got in a time machine and returned to the 1980s. There are calls for "more science" and "protecting rights," pro-tobacco interests are hiring political consultants, running advertisements and placing robocalls and well-organized "vapers' rights" groups are pressuring the Council.

The fact is that Los Angeles, like hundreds of other places, saw past the controversy that pro-tobacco forces generated (and today the e-cigarette companies are being taken over by the tobacco industry) and passed its smokefree legislation. And the public loved it.

Now is the time to do the same thing and take the simple step of adding e-cigarettes to your smokefree ordinance.

If I can provide any additional information, feel free to contact me.

Best wishes,

A handwritten signature in black ink, appearing to read "Stanton A. Glantz". The signature is fluid and cursive, with the first name being the most prominent.

Stanton A. Glantz, PhD
Professor of Medicine
American Legacy Foundation Distinguished Professor of Medicine
Director, Center for Tobacco Control Research and Education