

National Vapers Club
Submitted Testimony
Research and Studies

National Vapers Club Board of Directors

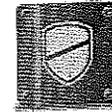
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If there was one thing YOU could to improve the overall health of YOUR constituents what would it be?

According to the CDC; *"Cigarette smoking is responsible for more than 480,000 deaths per year in the United States, including an estimated 42,000 deaths resulting from secondhand smoke exposure. This is about one in five deaths annually, or 1,300 deaths every day."* Today in the US, smoking is the leading cause of preventable death. Within the last few years, it is estimated that millions of former smokers have completely eliminated or at the least reduced putting deadly smoke from tobacco in their lungs because of their use of vaping products.

National Vapers Club has submitted this packet for your review; inside you will find various studies that have been done on vaping products. Please consider this information prior to making any decision on these life-saving products.

There are significant numbers of studies that have been conducted on the subject, which show very positive results in the reduction of harm from smoking. It is in the best interest of public health that vaping products be made readily available to adults who wish to make the switch from smoking. Imposing restrictions on a product that has not shown to have negative health consequences will only result in perpetuating the damage that smoking has caused for generations by discouraging smokers to switch to e-cigarettes.

Please contact us with any questions by sending an email to "info@vapersclub.com"

Table of Contents

Indoor Air Quality Studies.....	3
Physiological Analyses regarding E-cigarette Use.....	5
Surveys and Behavioral Studies	8
Liquid/Vapor Analyses	18
TSNA levels in e-cigarettes vs. other tobacco products.....	18
Frequently Asked Questions	23

*National Vapers Club is a volunteer organization founded in 2009 by vaping product consumers that raises funds for scientific research, provides education to anyone who wants to learn more about vaping products, and helps protect vaper's rights by activism on the local, state and federal levels. The group presents Vapefest (vapefest.com) a semi-annual convention for vapers which is an educational, consumer/trade show. With funds raised from this and other grass-roots efforts, National Vapers Club funded the Indoor Vapor Air Quality Study (ivaqs.com) that determined the vapor emitted from these products did not present a risk for bystanders. In 2011 data was collected at Clarkson University's Center for Air Resources Engineering & Science. Data was published in the peer reviewed journal, *Inhalation Toxicology* in October 2012. This data is now presented to legislatures and health departments in localities where vaping product bans have been proposed or passed.*



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Indoor Air Quality Studies

Comparison of the Effects of E-cigarette Vapor and Cigarette Smoke on Indoor Air Quality
Inhalation Toxicology, October 2012, Vol. 24, No. 12 , Pages 850-857

Conclusions: For all byproducts measured, electronic cigarettes produce very small exposures relative to tobacco cigarettes. The study indicates no apparent risk to human health from e-cigarette emissions based on the compounds analyzed.

Read more: <http://informahealthcare.com/doi/abs/10.3109/08958378.2012.724728>

Levels of selected carcinogens and toxicants in vapour from electronic cigarettes
Tobacco Control, March 6, 2013

Conclusions Our findings are consistent with the idea that substituting tobacco cigarettes with e-cigarettes may substantially reduce exposure to selected tobacco-specific toxicants. E-cigarettes as a harm reduction strategy among smokers unwilling to quit, warrants further study

Read More: <http://tobaccocontrol.bmj.com/content/early/2013/03/05/tobaccocontrol-2012-050859.abstract>

Characterization of chemicals released to the environment by electronic cigarettes use (ClearStream-AIR project): is passive vaping a reality?

Conclusions Passive vaping is expected from the use of e-CIG. However, the quality and quantity of chemicals released to the environment are by far less harmful for the human health compared to regular tobacco cigarettes. Evaporation instead of burning, absence of several harmful chemicals from the liquids and absence of sidestream smoking from the use of the e-CIG are probable reasons for the difference in results.

Read more: http://clearstream.flavourart.it/site/wp-content/uploads/2012/09/CSA_ItaEng.pdf

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Secondhand Exposure to Vapors From Electronic Cigarettes *Nicotine & Tobacco Research*, December 11, 2013

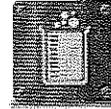
Conclusions: Using an e-cigarette in indoor environments may involuntarily expose nonusers to nicotine but not to toxic tobacco-specific combustion products. More research is needed to evaluate health consequences of secondhand exposure to nicotine, especially among vulnerable populations, including children, pregnant women, and people with cardiovascular conditions.

Read more: <http://ntr.oxfordjournals.org/content/early/2013/12/10/ntr.ntt203.short>

A Clinical Laboratory Model for Evaluating the Acute Effects of Electronic “Cigarettes”: Nicotine Delivery Profile and Cardiovascular and Subjective Effects *Cancer, Epidemiology, Biomarkers & Prevention*, July 20, 2010

Conclusions: Under these acute testing conditions, neither of the electronic cigarettes exposed users to measurable levels of nicotine or CO, although both suppressed nicotine/tobacco abstinence symptom ratings.

Read more: <http://www.vapersclub.com/Eissenberg2ndstudy.pdf>



February 26, 2014

Physiological Analyses regarding E-cigarette Use

Safety evaluation and risk assessment of electronic cigarettes as tobacco cigarette substitutes: a systematic review

Therapeutic Advances in Drug Safety, February 13, 2014

Abstract: *Electronic cigarettes are a recent development in tobacco harm reduction. They are marketed as less harmful alternatives to smoking. Awareness and use of these devices has grown exponentially in recent years, with millions of people currently using them. This systematic review appraises existing laboratory and clinical research on the potential risks from electronic cigarette use, compared with the well-established devastating effects of smoking tobacco cigarettes. Currently available evidence indicates that electronic cigarettes are by far a less harmful alternative to smoking and significant health benefits are expected in smokers who switch from tobacco to electronic cigarettes. Research will help make electronic cigarettes more effective as smoking substitutes and will better define and further reduce residual risks from use to as low as possible, by establishing appropriate quality control and standards.*

Read More: <http://taw.sagepub.com/content/early/2014/02/12/2042098614524430.abstract>

Electronic cigarette smokers report decreased consumption, health improvements
Addiction, April 2013

Quote: *"Although absolute safety and product quality should be more thoroughly evaluated, the implications of these findings for policy-makers, regulators and health-care providers are clear: prohibiting or discouraging the use of e-cigarettes could be detrimental to public health if smokers are deprived of a highly endorsed and well-tolerated method of smoking cessation."*

Read more: <http://www.cspnet.com/category-management-news-data/tobacco-news-data/articles/study-suggests-e-cigs-potential-cessation>

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Acute impact of active and passive electronic cigarette smoking on serum cotinine and lung function.

Inhalation Toxicology, February 2013

Conclusion: *Regarding short-term usage, the studied e-cigarettes generate smaller changes in lung function but similar nicotinic impact to tobacco cigarettes. Future research should target the health effects of long-term e-cigarette usage, including the effects of nicotine dosage.*

Read more: <http://www.ncbi.nlm.nih.gov/pubmed/23363041>

Carboxyhaemoglobin levels, health and lifestyle perceptions in smokers converting from tobacco cigarettes to electronic cigarettes

The South African Medical Journal, September 30, 2013

Objectives. *To determine whether smoking the Twisp electronic cigarette (e-cigarette), containing nicotine in a vegetable-based glycerine substance, would reduce carboxyhaemoglobin (COHb) levels in regular cigarette smokers by (i) comparing arterial and venous COHb levels before and after smoking the Twisp e-cigarette for 2 weeks; and (ii) evaluating changes in participants' perception of their health and lifestyle following the use of Twisp e-cigarettes*

Read more: <http://www.sami.org.za/index.php/sami/article/view/6887>

Comparison of the Cytotoxic Potential of Cigarette Smoke and Electronic Cigarette Vapour Extract on Cultured Myocardial Cells

International Journal of Environmental Research and Public Health, October 16, 2013

Abstract: *The purpose of this study was to evaluate the cytotoxic potential of the vapour of 20 EC liquid samples and a "base" liquid sample (50% glycerol and 50% propylene glycol, with no nicotine or flavourings) on cultured myocardial cells.*

Read more: <http://www.mdpi.com/1660-4601/10/10/5146>

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Electronic cigarettes: effective nicotine delivery after acute administration.

Nicotine Tobacco Research, January 2013

CONCLUSIONS: *User experience and/or device characteristics likely influence EC nicotine delivery and other effects. Systematic manipulation of these and other variables could elucidate conditions that produce intended effects.*

Read more: <http://www.ncbi.nlm.nih.gov/pubmed/22311962>

Acute electronic cigarette use: nicotine delivery and subjective effects in regular users.

Psychopharmacology, January 2014

CONCLUSIONS: *These findings demonstrate reliable blood nicotine delivery after the acute use of this brand/model of e-cigarette in a sample of regular users. Future studies might usefully quantify nicotine delivery in relation to inhalation technique and the relationship with successful smoking cessation/harm reduction*

Read more: <http://www.ncbi.nlm.nih.gov/m/pubmed/23978909/>

Polosa et al. The electronic-cigarette: Effects on desire to smoke, withdrawal symptoms and cognition

Addictive Behaviors, August 2012

Highlights: *The e-cigarette can reduce desire to smoke and nicotine withdrawal symptoms 20 minutes after use. ► The nicotine content in this respect may be more important for males. ► The first study to demonstrate that the nicotine e-cigarette can improve working memory.*

Read more: <http://www.sciencedirect.com/science/article/pii/S0306460312000913>



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Surveys and Behavioral Studies

Nicotine absorption from electronic cigarette use: comparison between first and new-generation devices

Scientific Reports, February 2014

A wide range of electronic cigarette (EC) devices, from small cigarette-like (first-generation) to new-generation high-capacity batteries with electronic circuits that provide high energy to a refillable atomizer, are available for smokers to substitute smoking. Nicotine delivery to the bloodstream is important in determining the addictiveness of ECs, but also their efficacy as smoking substitutes. In this study, plasma nicotine levels were measured in experienced users using a first- vs. new-generation EC device for 1 hour with an 18 mg/ml nicotine-containing liquid. Plasma nicotine levels were higher by 35–72% when using the new- compared to the first-generation device. Compared to smoking one tobacco cigarette, the EC devices and liquid used in this study delivered one-third to one-fourth the amount of nicotine after 5 minutes of use. New-generation EC devices were more efficient in nicotine delivery, but still delivered nicotine much slower compared to tobacco cigarettes. The use of 18 mg/ml nicotine-concentration liquid probably compromises ECs' effectiveness as smoking substitutes; this study supports the need for higher levels of nicotine-containing liquids (approximately 50 mg/ml) in order to deliver nicotine more effectively and approach the nicotine-delivery profile of tobacco cigarettes.

Read more: <http://www.nature.com/srep/2014/140226/srep04133/full/srep04133.html>

Electronic nicotine delivery systems: adult use and awareness of the 'e-cigarette' in the USA

Tobacco Control, October 2011

Conclusions *Given the large increase in awareness and ever use of ENDS during this 1-year period and the unknown impact of ENDS use on cigarette smoking behaviours and long-term health, continued monitoring of these products is needed.*

Read more: <http://tobaccocontrol.bmj.com/content/early/2011/10/27/tobaccocontrol-2011-050044.full>

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Perceived efficacy of e-cigarettes versus nicotine replacement therapy among successful e-cigarette users: a qualitative approach

Addiction Science & Clinical Practice, March 2013

Conclusions: These findings suggest tobacco control practitioners must pay increased attention to the importance of the behavioral and social components of smoking addiction. By addressing these components in addition to nicotine dependence, e-cigarettes appear to help some tobacco smokers transition to a less harmful replacement tool, thereby maintaining cigarette abstinence.

Read more: <http://www.ascpjournals.org/content/8/1/5/abstract>

'Vaping' profiles and preferences: an online survey of electronic cigarette users

Addiction, March 2013

Conclusions: E-cigarettes are used primarily for smoking cessation, but for a longer duration than nicotine replacement therapy, and users believe them to be safer than smoking.

Read more: <http://onlinelibrary.wiley.com/doi/10.1111/add.12150/abstract>

Effect of an electronic nicotine delivery device (e-Cigarette) on smoking reduction and cessation: a prospective 6-month pilot study

BMC Public Health, 2011

Conclusion: The use of e-Cigarette substantially decreased cigarette consumption without causing significant side effects in smokers not intending to quit (<http://ClinicalTrials.gov> number NCT01195597).

Read more: <http://www.biomedcentral.com/content/pdf/1471-2458-11-786.pdf>

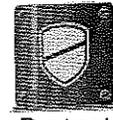
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Use of Emerging Tobacco Products in the United States

Journal of Environmental and Public Health, 2012

Abstract: *This paper provides the first nationally representative estimates for use of four emerging products. Addressing the issue of land-line substitution with cell phones, we used a mixed-mode survey to obtain two representative samples of US adults. Of 3,240 eligible respondents contacted, 74% completed surveys. In the weighted analysis, 13.6% have tried at least one emerging tobacco product; 5.1% snus; 8.8% waterpipe; 0.6% dissolvable tobacco products; 1.8% electronic nicotine delivery systems (ENDS) products. Daily smokers (25.1%) and nondaily smokers (34.9%) were the most likely to have tried at least one of these products, compared to former smokers (17.2%) and never smokers (7.7%), $p < .001$. 18.2% of young adults 18–24 and 12.8% of those >24 have tried one of these products, $p < .01$. In multivariable analysis, current daily (5.5, 4.3–7.6), nondaily (6.1, 4.0–9.3), and former smoking status (2.7, 2.1–3.6) remained significant, as did young adults (2.2, 1.6–3.0); males (3.5, 2.8–4.5); higher educational attainment; some college (2.7, 1.7–4.2); college degree (2.0, 1.3–3.3). Use of these products raises concerns about nonsmokers being at risk for nicotine dependence and current smokers maintaining their dependence. Greater awareness of emerging tobacco product prevalence and the high risk demographic user groups might inform efforts to determine appropriate public health policy and regulatory action*

Read more: <http://www.hindawi.com/journals/jep/2012/989474/>

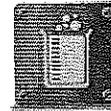
Use of e-cigarettes in Great Britain among adults and young people (2013)

Actions on Smoking and Health, May 2013

Conclusion: *Among adults electronic cigarette current use has grown among smokers and ex-smokers and remains at 0% among those who have never smoked. Ex-smokers report having used e-cigarettes to help a quit attempt (48%) to prevent relapse to tobacco use (32%).*

Read more: http://ash.org.uk/files/documents/ASH_891.pdf

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Dawkins et al. Effect of an electronic nicotine delivery device (e-Cigarette) on smoking reduction and cessation: a prospective 6-month pilot study

BMC Public Health, October 2011

Results: Sustained 50% reduction in the number of cig/day at week-24 was shown in 13/40(32.5%) participants; their median of 25 cigs/day decreasing to 6 cigs/day ($p < 0.001$). Sustained 80% reduction was shown in 5/40(12.5%) participants; their median of 30 cigs/day decreasing to 3 cigs/day ($p = 0.043$). Sustained smoking abstinence at week-24 was observed in 9/40(22.5%) participants, with 6/9 still using the e-Cigarette by the end of the study. Combined sustained 50% reduction and smoking abstinence was shown in 22/40 (55%) participants, with an overall 88% fall in cigs/day. Mouth (20.6%) and throat (32.4%) irritation, and dry cough (32.4%) were common, but diminished substantially by week-24. Overall, 2 to 3 cartridges/day were used throughout the study. Participants' perception and acceptance of the product was good.

Conclusion: The use of e-Cigarette substantially decreased cigarette consumption without causing significant side effects in smokers not intending to quit (<http://ClinicalTrials.gov> website number NCT01195597).

Read more: <http://www.biomedcentral.com/1471-2458/11/786>

Phillips Survey of e-cigarette users most of the sample was able to use e-cigarettes as a complete replacement for cigarettes.

TobaccoHarmReduction.org, November 2009

Results: *The frequencies of all survey questions are listed in Table 1. Approximately half of the sample was between the ages of 31 and 50, one-third were more than 50 years old and none were under the age of 18. Nearly three-quarters resided in the US, followed by 17% from the UK. Most of the respondents had been using e-cigarettes for less than six months and all had smoked prior to using e-cigarettes. Most of the respondents had previously tried to stop smoking multiple times. The majority (86%) of respondents had tried pharmaceutical products to quit smoking, nearly two-thirds of whom indicated that these products did not help them to stop smoking. However,*

Read more: <http://tobaccoharmreduction.org/wpapers/011v1.pdf>

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Effect of an e-cigarette on craving to smoke and withdrawal (Bullen) use and efficacy as a cessation aid is needed.

Tobacco Control, April 2010

Conclusions: *The 16 mg Ruyan V8 ENDD alleviated desire to smoke after overnight abstinence, was well tolerated and had a pharmacokinetic profile more like the Nicorette inhalator than a tobacco cigarette. Evaluation of the ENDD for longer-term safety, potential for long-term*

Read more: <http://www.healthnz.co.nz/2010%20Bullen%20ECia.pdf>

Comparing Smoking with Vaping

Vapersinternational.org, 2009

Conclusion: *The correlation between length of time since quitting smoking and length of time the person had been vaping suggests that most respondents quit smoking within 30-60 days after beginning use of the NV. (Quitting smoking was a condition for participation.) (See Fig. 1) Results suggest that many of the respondents use the device as a replacement for cigarette smoking and use it in a similar manner to the way they smoked tobacco cigarettes. Respondents who said they use the NV "much more" than they used tobacco cigarettes, as a whole, use substantially lower levels of nicotine than those who use it less or the same as tobacco cigarettes. Presumably, those using the device "much more" do so to increase nicotine intake. Average nicotine consumption is around 30-40 mg per day, although at this time we cannot confirm how much nicotine is absorbed by the body through this method of delivery.*

Read more:

<http://vapersinternational.org/wpcontent/uploads/SurveyComparingSmokingwithVapingFinalVersion.pdf>

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Interviews With “Vapers”: Implications for Future Research With Electronic Cigarettes (McQueen/Tower/Sumner) and experienced “vapers” are very interested and willing research participants.

Nicotine & Tobacco Research, April 2011

Conclusions: *The learning curve to using e-cigs has important implications for laboratory tests of these devices with novice users. Similarly, the multiple e-cig options and the use of “mods” create challenges for researchers and policy makers. Transdisciplinary research is urgently needed.*

Read more:

<http://ntr.oxfordjournals.org/content/early/2011/05/12/ntr.ntr088.abstract?keytype=ref&ijkey=095WzUwnLNO6Er9>

Electronic Cigarettes as a Smoking-Cessation Tool

Institute of Social and Preventive Medicine, University of Geneva, Switzerland

Conclusions: *Findings suggest that e-cigarettes may hold promise as a smoking-cessation method and that they are worthy of further study using more-rigorous research designs.*

Read more:

http://www.biomedcentral.com/imedia/144047701319135_article.pdf?random=19859http://www.ajpmonline.org/webfiles/images/journals/AMEPRE/AMEPRE3013.pdf

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Impact of an electronic cigarette on smoking reduction and cessation in schizophrenic smokers: a prospective 12-month pilot study.

Read more: <http://www.ncbi.nlm.nih.gov/pubmed/23358230>

Electronic cigarettes for smoking cessation: a randomised controlled trial

Interpretation: E-cigarettes, with or without nicotine, were modestly effective at helping smokers to quit, with similar achievement of abstinence as with nicotine patches, and few adverse events. Uncertainty exists about the place of e-cigarettes in tobacco control, and more research is urgently needed to clearly establish their overall benefits and harms at both individual and population levels.

Read More: <http://www.thelancet.com/journals/lancet/article/PIIS0140-6736%2813%2961842-5/fulltext>

ASCEND: A Study of Smoking Cessation with Electronic Nicotine Devices

Rationale: Most people find it difficult to succeed in quit attempts largely because of dependence on nicotine but also to non-nicotine sensory cues. Nicotine replacement therapy (NRT) doubles quit rates by making the transition to non-smoker less traumatic. Nevertheless, absolute long-term quit rates are low. A product that has potential as a cessation aid and with wider appeal than NRTs is the electronic cigarette. People buy them to help quit smoking, reduce cigarette consumption and costs, to relieve tobacco withdrawal symptoms or as a replacement for smoking. However, despite the claims of efficacy and popularity there is no evidence from trials of their efficacy on quitting and safety.

Read more: <http://nihi.auckland.ac.nz/page/current-research/our-addiction-research/ascend-study-smoking-cessation-electronic-nicotine-devi>

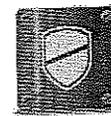
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Smokers Who Try E-Cigarettes to Quit Smoking: Findings From a Multiethnic Study in Hawaii

Conclusion: *Smokers who try e-cigarettes to quit smoking appear to be serious about wanting to quit. Despite lack of evidence regarding efficacy, smokers treat e-cigarettes as valid alternatives to FDA-approved cessation aids. Research is needed to test the safety and efficacy of e-cigarettes as cessation aids.*

Read More: <http://ajph.aphapublications.org/doi/abs/10.2105/AJPH.2013.301453>

Effectiveness and tolerability of electronic cigarette in real-life: a 24-month prospective observational study

Abstract: *Electronic cigarettes (e-Cigarette) are battery-operated devices designed to vaporize nicotine that may aid smokers to quit or reduce their cigarette consumption. Research on e-Cigarettes is urgently needed to ensure that the decisions of regulators, healthcare providers and consumers are evidence based. Here we assessed long-term effectiveness and tolerability of e-Cigarette used in a 'naturalistic' setting. This prospective observational study evaluated smoking reduction/abstinence in smokers not intending to quit using an e-Cigarette ('Categoria'; Arbi Group, Italy). After an intervention phase of 6 months, during which e-Cigarette use was provided on a regular basis, cigarettes per day (cig/day) and exhaled carbon monoxide (eCO) levels were followed up in an observation phase at 18 and 24 months.*

Read more: <http://link.springer.com/article/10.1007/s11739-013-0977-z>

Trends in use of electronic nicotine delivery systems by adolescents

Abstract: *Electronic nicotine delivery systems (ENDS) have been gaining in popularity. The few prevalence studies in adults have found that most ENDS users are current or former smokers. The objectives of this study were to estimate the prevalence of ENDS usage in adolescents, and examine the correlates of use. Self-administered written surveys assessing tobacco use behaviors were conducted in multiple waves as part of a larger intervention study in two large suburban high schools. The prevalence of past-30 day ENDS use increased from 0.9% in February 2010 to 2.3% in June 2011 ($p = 0.009$). Current cigarette smokers had increased odds of past-30 day ENDS use in all study waves. When adjusted for school, grade, sex, race and smoking status, students in October 2010 (Adjusted OR 2.12; 95% confidence interval*

Read more: <http://www.sciencedirect.com/science/article/pii/S0306460313002736>

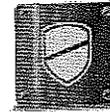
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Efficiency and Safety of an electronic cigarette (ECLAT) as tobacco cigarettes substitute: a prospective 12-month randomized control design study.

CONCLUSION: *In smokers not intending to quit, the use of e-cigarettes, with or without nicotine, decreased cigarette consumption and elicited enduring tobacco abstinence without causing significant side effects.*

Read more: <http://www.ncbi.nlm.nih.gov/pubmed/23826093>

Pilot Investigation of Changes in Readiness and Confidence to Quit Smoking After E-cigarette Experimentation and 1 Week of Use

Conclusions: *Among a small convenience sample of unmotivated cigarette smokers, EC experimentation and 1 week of ad libitum use increased readiness and confidence to quit regular cigarettes and reduced regular cigarette smoking.*

Read more: <http://ntr.oxfordjournals.org/content/early/2013/10/22/ntr.ntt138.abstract>

The Use and Perception of Electronic Cigarettes and Snus among the U.S. Population

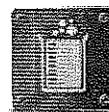
Conclusions: *That e-cigarettes have surpassed snus in adoption rate, even before any promotion by major tobacco companies, suggests that the former have tapped into smokers' intuitive preference for potentially harm-reducing products, probably due to the product design. E-cigarette use is likely to increase in the next few years.*

Read more: <http://www.plosone.org/article/info%3Adoi%2F10.1371%2Fjournal.pone.0079332>

A longitudinal study of electronic cigarette users

Conclusions: *E-cigarettes may contribute to relapse prevention in former smokers and smoking cessation in current smokers.*

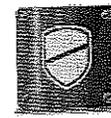
Read more: <http://www.sciencedirect.com/science/article/pii/S0306460313003304>



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Health-Related Effects Reported by Electronic Cigarette Users in Online Forums

Conclusions: *This is the first compilation and analysis of the health effects reported by e-cigarette users in online forums. These data show that e-cigarette use can have wide ranging positive and negative effects and that online forums provide a useful resource for examining how e-cigarette use affects health.*

Read more: <http://www.jmir.org/2013/4/e59/>

Electronic nicotine delivery systems: adult use and awareness of the 'e-cigarette' in the USA

Read more: http://www.sfata.org/wp-content/uploads/2013/06/Regan-et-al-E-cig-adult-use-Tob-Ctrl-19.full_.pdf

A Survey of Conventional Cigarette Smokers' Experiences With e-Cigarettes

Conclusions: *Almost one-fifth of smokers who try ECs once go on to become regular users. ECs may develop into a genuine competitor to conventional cigarettes. Government agencies preparing to regulate ECs need to ensure that such moves do not create a market monopoly for conventional cigarettes.*

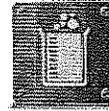
Read more: <http://journal.publications.chestnet.org/article.aspx?articleID=1714565>

Evaluation of Electronic Cigarette Use (Vaping) Topography and Estimation of Liquid Consumption: Implications for Research Protocol Standards Definition and for Public Health Authorities' Regulation

Abstract: *Background: Although millions of people are using electronic cigarettes (ECs) and research on this topic has intensified in recent years, the pattern of EC use has not been systematically studied. Additionally, no comparative measure of exposure and nicotine delivery between EC and tobacco cigarette or nicotine replacement therapy (NRTs) has been established. This is important, especially in the context of the proposal for a new Tobacco Product Directive issued by the European Commission. Methods: A second generation EC device, consisting of a higher capacity battery and tank atomiser design compared to smaller cigarette-like batteries and cartomizers, and a 9 mg/mL nicotine-concentration liquid were used in this study. Eighty subjects were recruited; 45 experienced EC users and 35 smokers. EC users were video-recorded when using the device (ECIG group), while smokers were recorded when smoking (SM-S group) and when using the EC (SM-E group) in a randomized cross-over design.*

Read more: <http://www.mdpi.com/1660-4601/10/6/2500>

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Liquid/Vapor Analyses

TSNA levels in e-cigarettes vs. other tobacco products

Maximum Tobacco-Specific Nitrosamine (Carcinogen) Levels in Various Cigarettes and Nicotine-Delivery Products
(mg, except for nicotine gum and patch, which are µg patch or mg gum paste)

Product	Tobacco specific nitrosamines				
	NNN	NNK	NAT	NAB	Total
Electronic cigarettes (2)	3.87	1.46	2.16	0.693	8
Nicotine gum (1)	2.00	Not detected	Not detected	Not detected	2
Nicotine patch (1)	Not detected	8.00	Not detected	Not detected	8
Swedish snus (3)					2,400
Winston US (1)	2200	580	560	25	3,365
Newport US (1)	1100	830	1900	55	3,885
Marlboro NZ (3)					6,600
Camel (1)	3100	1400	2800	150	7,450
Skool (1)	4500	470	4100	220	9,290
Marlboro US (1)	4300	1800	4900	190	11,190

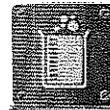
Sources:

1. Boppre A, Jensen D, Haddad D, Hohe SS. Tobacco-specific nitrosamines in new tobacco products. *Journal of Tobacco Research* 2006; 23(5):213. <http://www.tobaccojournal.com/404/boppre%20et%20al.pdf>
2. Langston M. *Nicotine: Key to the Brain's Addiction*. Cambridge and Ashford: Ashford, Christchurch, New Zealand: Health New Zealand Ltd, 2004. <http://www.healthnewzealand.govt.nz/AboutUs/Reports%20and%20Publications>
3. Waudhby E. Tobacco-specific Nitrosamines in Danish and Swedish Tobacco. *Report to Health New Zealand Ltd, Swedish Match*, 2004. <http://www.match.com.au/healthnewzealand/TSNA.htm>

Source: <http://www.vapersclub.com/TSNAChart.html>

<http://www.vapersclub.com/TSNAChart.jpg>

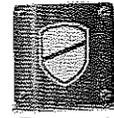
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Cytotoxicity evaluation of electronic cigarette vapor extract on cultured mammalian fibroblasts...

Conclusions: *This study indicates that EC vapor is significantly less cytotoxic compared tobacco CS. These results should be validated by clinical studies.*

Read More: <http://informahealthcare.com/doi/abs/10.3109/08958378.2013.793439>

Analysis of refill liquids for electronic cigarettes

Conclusion: *The nicotine content of electronic cigarette refill bottles is close to what is stated on the label. Impurities are detectable in several brands above the level set for nicotine products in the European Pharmacopoeia, but below the level where they would be likely to cause harm*

Read more: <http://onlinelibrary.wiley.com/doi/10.1111/add.12235/pdf>

Analysis of e-cigarette vapor for nicotine and nicotine related impurities

CONCLUSIONS: *The gradient elution method was developed to allow for separation of the nicotine related impurities and for their determination in cartridge extracts of the electronic cigarettes. Nicotine was shown to be delivered using electronic cigarette devices although the amount of nicotine delivered will be greatly impacted by the "smoking" habits of the consumer. Significant labeling issues were found to exist with products in the market place with respect to product labeling accuracy. Some products were found to contain high concentrations of nicotine when labeled not to contain nicotine.*

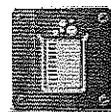
Read more: <http://vaporsclub.com/TrehyElectronicCigaretteCartridgeAnalysis.pdf>

Safety Report on the Ruyan E-cigarette Cartridge and Inhaled Aerosol

Study shows TSNA levels in vaporized nicotine liquid is below what would be considered carcinogenic.

Read more: <http://www.healthnz.co.nz/RuyanCartridgeReport21-Oct-08.pdf>

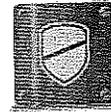
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February 26, 2014

Njoy vapor study evaluating TSNA levels in Njoy e-cigs

Comments. *Inhaled nicotine in cigarette smoke is over 98% absorbed, and so the exhaled mist of the e-cigarette is composed of propylene glycol, and probably contains almost no nicotine; and no CO. (see Figure 3.5) Lacking any active ingredient or any gaseous products of combustion, the PG mist or 'smoke' is not harmful to bystanders. The 'smoke' or mist is not tobacco smoke, and not from combustion – no flame is lit – and is not defined as environmental tobacco smoke. E-cigarette "smoking" would be permitted under New Zealand's Smoke-free Environments Act 1990.32*

Read more: <http://www.vapersclub.com/NJOYvaporstudy.pdf>

Studies of individual companies Liquid

e-cigs.co.uk

<http://www.e-cigs.co.uk/docs/E249A.pdf>

InLife (Alliance Technologies)

<http://truthaboutecigs.com/science/8.pdf>

<http://truthaboutecigs.com/science/9.pdf>

esmoke.net

<http://www.esmoke.net/batch/090124/PGDrumGCFID.pdf> (PG Raw Material)

<http://www.esmoke.net/batch/090124/GLDrumGCFID.pdf> (Glycerin Raw Material)

<http://www.esmoke.net/batch/090124/090124-GCFID.pdf> (GC/FID)

<http://www.esmoke.net/batch/090124/090124-GCMS.pdf> (GC/MS)

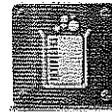
Totally Wicked/TECC

http://www.theelectroniccigarette.co.uk/images/pictures/documents/e-cartridges_toxicology_report.pdf

Gamucci

<http://www.ecigaretteschoice.com/GamucciLabStudy.pdf>

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February 26, 2014

Instead

<http://www.e-cig.org/pdfs/Instead-ELiquid-Report.pdf>

NJOY

<http://vapersclub.com/NJOYvaporstudy.pdf>

Ruyan

<http://www.healthnz.co.nz/RuyanCartr...t30-Oct-08.pdf>

SuperSmoker

<http://www.supersmokerjp.com/images/...anslatiion.pdf>

Totally Wicked

<http://www.vapersclub.com/TWlpdlabs.doc>

Metal and Silicate Particles Including Nanoparticles Are Present in Electronic Cigarette Cartomizer Fluid and Aerosol

Conclusions: *The presence of metal and silicate particles in cartomizer aerosol demonstrates the need for improved quality control in EC design and manufacture and studies on how EC aerosol impacts the health of users and bystanders.*

Read more: <http://www.plosone.org/article/info:doi/10.1371/journal.pone.0057987>

Nicotine levels in electronic cigarettes

CONCLUSIONS: *ECs generate vapor that contains nicotine, but EC brands and models differ in their efficacy and consistency of nicotine vaporization. In ECs, which vaporize nicotine effectively, the amount inhaled from 15 puffs is lower compared with smoking a conventional cigarette.*

Read more: <http://mnvapers.com/2014/02/urgent-call-action-minnesota/http://www.ncbi.nlm.nih.gov/pubmed/22529223>

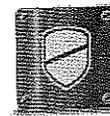
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FDA Preliminary Report

<http://www.fda.gov/downloads/Drugs/ScienceResearch/UCM173250.pdf>

Responses to FDA Preliminary Report:

Scientific Review of FDA Report

Conclusions: *Nicotine is present in both products. The Smoking Everywhere Electronic Cigarette cartridges listed as containing no nicotine in some cases had very low amounts of nicotine present. Tobacco specific nitrosamines and tobacco specific impurities were detected in both products at very low levels. DEG was identified in one cartridge, Smoking Everywhere 555 High. See Table 1 for results of analyses of entire cartridges after extraction.*

Read more: <http://www.vapersclub.com/exponentreportnjoy.pdf>

Prominent Doctors Specializing in Tobacco Harm Reduction Question FDA Study

BOSTON, July 27 /Standard Newswire/ -- The FDA recently went public with misleading information about the safety of electronic cigarettes and the marketing of the devices, not only using its clout but recruiting other prominent organizations to demonize a product that has great public health benefit potential.

Read more: <http://www.standardnewswire.com/news/162574365.html>

Peering through the mist: systematic review of what the chemistry of contaminants in electronic cigarettes tells us about health risks

Conclusion: *Current state of knowledge about chemistry of liquids and aerosols associated with electronic cigarettes indicates 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.*

Read more: <http://www.biomedcentral.com/1471-2458/14/18/abstract>

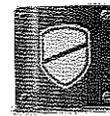
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Frequently Asked Questions

What are electronic cigarettes?

Electronic cigarettes (also known as e-cigarettes or personal vaporizers) are an alternative to tobacco cigarettes. They are battery-operated devices that create a mist or vapor that is inhaled instead of smoke. The rechargeable battery powers a heating element called an "atomizer." The element uses low heat to turn liquid in the cartridge, which contains propylene glycol, glycerin, food flavoring and nicotine, into a fog-like mist.

There are many models of e-cigarettes available. Some look like traditional cigarettes, others look similar to a pen and some even look like small flashlights. Some have LED lights, some have built-in liquid reservoirs, others have combined atomizer cartridges, some are tubular and some are even rectangular boxes. They come in all shapes and sizes and have different features for former smokers who wish to distance themselves from anything resembling a traditional cigarette or want a longer battery life and/or better performance.

Are e-cigarettes safe?

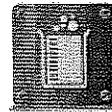
While anything containing nicotine cannot be called 100% safe, evidence from numerous studies strongly suggests that they are magnitudes safer than tobacco cigarettes. Harm reduction experts can point to research supporting that switching from cigarettes to a smokefree product will reduce health risks to less than 1% of smoking traditional cigarettes - nearly the same as non-smokers. For tobacco harm reduction health professionals, it is misleading and irresponsible for public health officials to tell smokers that smokeless products, such as e-cigarettes, are "not a safe alternative to smoking" simply because they are "only" 99% safer and not 100% safe.

Do e-cigarettes contain anti-freeze?

No. This myth was created by a 2009 FDA press statement regarding electronic cigarettes. The FDA tested 18 cartridges from 2 companies. Of those 18 cartridges, 1 tested positive for a non-toxic amount of diethylene glycol (approximately 1%). While diethylene glycol is occasionally used in anti-freeze, the chemical is not a standard ingredient in e-cigarette liquid and it has not been found in any other samples tested to date.

The base liquid for e-cigarette liquid is usually propylene glycol. Propylene glycol is considered GRAS (Generally Recognized As Safe) by the FDA and EPA. While it is also sometimes found in anti-freeze, it is actually added to make the anti-freeze less toxic and safer for small children and pets. Propylene glycol is a common ingredient found in many of the foods we eat, cosmetics we use and medications we take. It is also used in the fog machines used in theaters and night clubs.

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February 26, 2014

Do e-cigarettes cause cancer just like tobacco cigarettes?

Though testing by the FDA and some researchers have discovered trace amounts of tobacco-specific nitrosamines, which are known to cause cancer with high exposure, the amounts found were extremely low and unlikely to cause cancer. To put it in perspective, an e-cigarette contains nearly the exact same trace levels of nitrosamines as the FDA-approved nicotine patch and about 1,300 times less nitrosamines than a Marlboro cigarette. This means that e-cigarettes would not be any more likely to cause cancer than FDA-approved nicotine gums, patches or lozenges.

What about all of the news reports that e-cigarettes contain toxic chemicals and metals?

The reports that there are studies that show potential health risks due to e-cigarette use are premature. In spite of what has been reported, the studies done to date have not only been largely inconclusive, but have actually found that the levels of contaminants detected in e-cigarette liquid and vapor are so low that it is highly doubtful they would even pose a health risk. Most certainly, they are thousands of times less of a risk than continuing to smoke. The fact is, the mere "detection" of a chemical does not mean that a product is hazardous. Every day we harmlessly consume and breathe in chemicals that would be toxic at much higher levels. It is disingenuous for public health organizations that disapprove of e-cigarettes to point to the trace levels found in e-cigarette studies as conclusive evidence of a potential health risk.

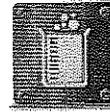
Dr. Igor Burstyn, of Drexel University, reviewed all of the available chemistry on e-cigarette vapor and liquid and found that the levels reported — even in those studies that were hyped as showing there is a danger — are well below the level that is of concern. His report was peer-reviewed and published January 2014 on Bio Med Central's Public Health Journal: "Peering through the mist: systematic review of what the chemistry of contaminants in electronic cigarettes tells us about health risks"

In 2011, The FDA issued a statement regarding the approved smoking cessation drug Chantix, which has been linked to over 500 deaths, suicidal tendencies and heart attacks. The FDA stated that "the drug's benefits outweigh the risks." E-cigarettes have been on the market nearly as long as Chantix, without reports of significant adverse reactions or deaths. Studies have shown that while chemicals have been detected, they are too low to pose any significant health risks and are certainly far less exposure than found in cigarette smoke. It is clear to anyone who reviews the more than 60 available studies on e-cigarette liquids and vapor that the benefits of e-cigarettes also "far outweigh the risks."

If there are over 60 studies of e-cigarette vapor and liquid, why do health experts say we don't know what is in them or that they may be more dangerous than traditional cigarettes?

Good question. Unfortunately, we don't have a clear answer. What we do know is that pharmaceutical companies do not like to see smokers switching to e-cigarettes instead of using pharmaceutical drugs and nicotine products. The pharmaceutical industry and its "foundations" fund a lot of anti-tobacco research and supports many of the anti-tobacco organizations and politicians that object to e-cigarettes and tobacco harm reduction policies.

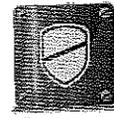
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February 26, 2014

We also know that there is a small, but very vocal, part of the public health community that is against anything that doesn't require 100% abstinence from all tobacco and nicotine. Their objection to e-cigarettes appear to be more ideological than science-based and it seems they would rather smokers remain uncertain enough about e-cigarette safety that they will choose to keep trying to quit smoking with traditional methods instead. Unfortunately, while this may be an option for those smokers who are actively trying to quit, it keeps smokers who aren't trying to quit - or who fail to quit using traditional methods - using the most hazardous product on the market, rather than a far safer alternative.

Are e-cigarettes approved or regulated by the FDA?

The FDA currently considers e-cigarettes to be tobacco products. Originally, it claimed that e-cigarettes are being used as smoking cessation devices and therefore they needed to be regulated the same as pharmaceutical nicotine replacement therapy drugs (NRTs). In 2009, the FDA ordered customs officials to start seizing e-cigarette shipments coming into the country.

On April 25, 2011, FDA announced in a letter to stakeholders that it would not appeal the decision by the U.S. Court of Appeals for the D.C. Circuit in *Sottera, Inc. v. Food & Drug Administration*, stating that e-cigarettes and other products are not drugs/devices unless they are marketed for therapeutic purposes, but that products "made or derived from tobacco can be regulated as "tobacco products" under the FD&C Act. The FDA stated that it is aware that certain products made or derived from tobacco, such as electronic cigarettes, are not currently subject to pre-market review requirements of the Family Smoking Prevention and Tobacco Control Act. It is developing a strategy to regulate this "emerging class of products" as tobacco products under the Family Smoking Prevention and Tobacco Control Act. Products that are marketed for therapeutic purposes will continue to be regulated as drugs and/or devices. In late 2013, the FDA submitted its regulatory proposal to the OMB.

Contrary to some media reports and comments by legislators, regulation as a "tobacco product" under FSPTCA does not mean that e-cigarettes are automatically regulated in the exact same manner as tobacco cigarettes, i.e., subject to PACT, flavoring prohibitions and indoor use bans nor subject to the same tax rates. However, it does mean sales of these products to minors are finally prohibited by law.

What e-cigarette brand most looks and tastes like a real cigarette?

This is the most common question on e-cigarette forums. The best answer to that question is "none" and "it doesn't matter."

Since those considering e-cigarettes are usually seeking to replace tobacco cigarettes, they are under the assumption that having the most realistic, tobacco-flavored e-cigarette will bring the most satisfaction. The truth of it is that after switching to e-cigarettes for a few weeks, the vast majority of users discover that looks ultimately don't matter - performance does. And the best performing e-cigarettes don't necessarily look anything like traditional cigarettes because they require larger batteries. And the most popular flavors with experienced users are often as far from tobacco-tasting as one can get.

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February 26, 2014

One problem is that none of the tobacco flavors really taste like burning tobacco - they taste more like fresh tobacco smells and slightly sweet. So, experienced e-cigarette users will tell you that nothing tastes exactly like a burning tobacco cigarette. But, we know you won't believe us and insist on buying something that looks and tastes like a tobacco cigarette. That's ok - we've all been there!

Can e-cigarettes help me quit smoking?

E-cigarettes are not approved to be marketed as nicotine cessation products like the nicotine gums and patches on the market. However, that doesn't mean that some smokers haven't found them an effective way to wean from nicotine. There is also a lot of real-world evidence and even some studies that strongly indicate that e-cigarettes are an effective alternative to smoking. Surveys show that up to 80% of e-cigarette users quit smoking traditional cigarettes while using e-cigarettes. One study showed e-cigarettes worked at least as well as the nicotine patch for nicotine replacement therapy.

However, while some users have gradually reduced the nicotine levels down to zero, the majority of e-cigarette users treat the devices as an alternate source of nicotine and not as a nicotine cessation program. So there is not as much scientific evidence yet that show how effective e-cigarettes are when used to treat or cure nicotine addiction. Yet, anecdotal reports by users who have used e-cigarettes as a way to wean from nicotine also indicates they seem to be very effective way to break smoking triggers and dramatically reduce nicotine levels. As with pharmaceutical NRTs, it depends upon the smoker and the strength of his or her addiction and resolve to quit. E-cigarettes also appear to be a much safer option for short-term use in the event of relapse.

The good news is, nicotine by itself has very low health risks, so switching to e-cigarettes can be nearly as good as quitting altogether. The most important thing for those who cannot or will not quit nicotine to do is to stop the exposure to the harmful chemicals in cigarette smoke and e-cigarettes can help them do it.

http://www.casaa.org/FAQS_ecig.html

Have any other States looked closer at the benefits of Vaping Products and Electronic Cigarettes?

Great Question! These products are a topic of discussion in many cities and states across the nation. Many State Legislations have tabled bills regarding these products to look at more scientific research and discussion. We invite you to take a look at the Interim Study from the Oklahoma State Legislature. This study features presentations from leading researchers, policy advisors and industry leaders.

Read more: http://www.oksenate.gov/publications/senate_studies/interim_studies.aspx#%20