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The Benefits and Regulations of Electronic Cigarettes

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Nominated by: Mr. Scott Geisel

Sarah is pursuing a degree in Music at WSU. She is a musician, athlete, and leader. Sarah enjoys performing, running, biking, learning, and working hard. She also loves time with her friends and family.

Sarah notes:

I wrote this paper to discover the truth about electronic cigarettes beyond their social impact. I hope this paper enlightens many people on the benefits of this technology that may be able to lengthen the lives of our friends or family who smoke.

Mr. Geisel notes:

Sarah's article clearly defines a topic and questions to pursue, organizes the data and evidence into sections with good use of evidence, and provides conclusions and discussion. This effectively uses elements of scholarly writing but with language and accessibility for lay readers – which is a premise for the course.

Abstract

The use of electronic cigarettes is highly controversial today. The accomplishments in research and regulation are growing, and the potential to improve the safety and usage of electronic cigarettes is vast. The current regulations on where electronic cigarettes can be used in America are slowly progressing. While the health benefits of electronic cigarettes are vast, many people are uneducated and misinformed on possible health and safety risks that may arise from the use of electronic cigarettes. There is currently some support for expanding federal regulation on electronic cigarette use in public places. If Americans became more informed on the importance of electronic cigarettes as a safer option for the cessation of smoking and the need for regulation for the safety of bystanders, support would most likely increase. Expanding federal regulation on where electronic cigarettes can be used would expand opportunities for advancements greatly, and increase the use of electronic cigarettes as well.

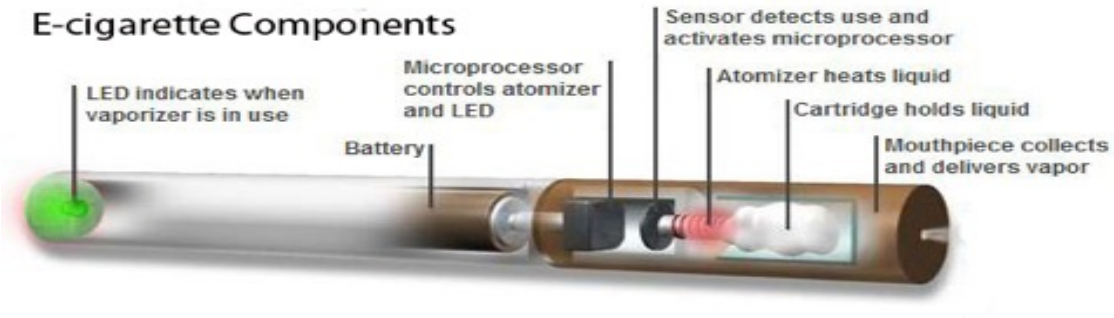

Figure 1 Visual of the Mechanics of an Electronic Cigarette. Source: How, 2014

Introduction

Electronic cigarettes are becoming an increasingly popular method of smoking either purely for enjoyment or to use during the cessation process. As seen in Figure 1, electronic cigarettes contain a rechargeable lithium battery, a cartridge containing nicotine, flavoring fluid, vegetable glycerin, and propylene glycol. They also contain an atomizer which has a heating coil that will vaporize the fluid to create the vapor. They also have an LED light at the bottom that lights up when it is being used. The fluid will be vaporized by the battery to create the vapor that the user will inhale and then puff out to recreate the sensation of smoking. Currently, electronic cigarettes are undergoing significant scrutiny as a social norm because of a general fear of electronic cigarettes, due to the lack of education and awareness to the general public on the benefits and safety of electronic cigarettes. Electronic cigarettes are also under scrutiny from larger corporations such as the Food and Drug Administration, because they are becoming a threat to the cigarette industry. However, electronic cigarettes are standing out through the scrutiny as a healthier and safer option for smokers. If provided with proper regulation to keep bystanders healthy and happy, and used properly and with discretion by users, electronic cigarettes can save lives.

Benefits

Cigarettes contain toxic chemicals such as ammonia, carbon monoxide, hydrogen cyanide, polonium, and over 20 more toxic chemicals (Smoking, 2014). Electronic cigarettes only contain the three basic chemicals of nicotine, propylene glycol, and vegetable glycerin. Although nicotine is still the addictive substance in cigarettes and electronic cigarettes, the propylene glycol and vegetable glycerin are significantly less harmful to the user than the above listed chemicals contained in regular cigarettes. Users can also add flavors to their electronic cigarette liquid, but this is commonly overlooked since it is both optional and harmless as well. The biggest benefit of the electronic cigarette is that the user is able to control nicotine levels at their discretion. They can do this either by purchasing their fluid with specific levels of nicotine and lowering it over a period of time, or by making their own fluid and controlling the level nicotine as they make it. This allows electronic cigarettes to be used as an aid in the cessation of smoking which can lead to the prevention of harmful effects of normal cigarettes such as asthma, emphysema, risk of heart attack, risk of heart disease, and a long list of cancers. The user can start out with the same levels of nicotine in their electronic cigarettes as in their normal cigarettes and gradually wean themselves off the nicotine over time, and then they can work on the hand-to-mouth gesture. In recent studies (Brown, 2013), after switching to electronic cigarettes, over 75% of people out of approx. 1000 people responded saying that they had experienced increased lung capacity, increased ability to do strenuous activities, and a decrease in smoker's cough, as seen in Figure 2.

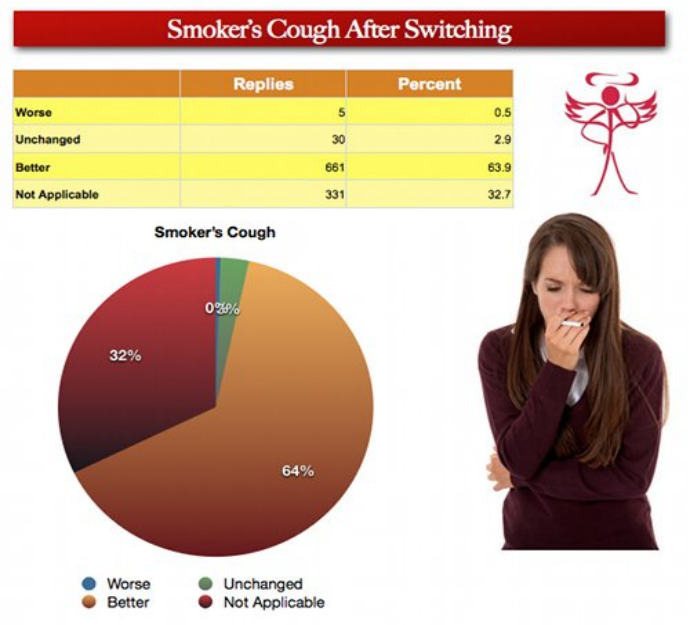

Figure 2, Smoker's cough decreasing after switching to Electronic cigarettes. Source: Dunworth, 2014

Healthy and Safety Concerns

The most apparent concern is that nicotine is addictive. However, electronic cigarettes can be used without any nicotine: solely with flavoring, and other fluids. The users of electronic cigarettes can also control the level of nicotine content in the liquid either by purchasing it with lower levels of nicotine or making their own. The ability to control the amount of nicotine in the fluid can enable smokers who are trying to quit by switching to electronic cigarettes to ease the cessation of smoking by eliminating nicotine, the addictive substance, but keeping the hand to mouth gesture. Electronic cigarettes are also rumored to create formaldehyde when smoked on high heat levels. In order to create formaldehyde, the user would have to hold down the button for over 100 seconds or have an extremely powerful device and use it irresponsibly. However, after 100 seconds of holding down the button on an electronic cigarette the temperature of the vapor would be too hot and uncomfortable to smoke (Stein, 2015). It's the equivalent of cooking a steak for 18 hours. Although the steak would be filled with carcinogens, it would be completely charcoal and no one human would actually be able to consume it. The vapor that is emitted also contains low levels of propylene glycol, which has been the primary concern of bystanders as far as chemicals in the vapor are concerned. There was an experiment done in 1972 by The Journal of Food and Cosmetic Toxicology on the toxicity of propylene glycol over time (Gaunt, 1972). Sixty rats were cared for and fed 5 – 6 kg of propylene glycol in their diet for two years. The rats were tested on their body-weight gain, food consumption, urinary cell excretion, and the urine-concentrating ability of the kidneys. The treatments of propylene glycol over two years seemed to have no effect on any of the rats for the mortality rates or previously mentioned tests. There was a smaller control group of rats that was also tested over a shorter period of time to see if the effects would increase over shorter periods of times, and this seemed to exhibit the same reaction as the larger group of rats, with the propylene glycol making no difference in the life of the rats. Propylene glycol and vegetable glycerin are found in everyday foods such as Caesar dressing, vitamins, and shampoo. As research is being pursued on electronic cigarettes and the chemicals involved, more positive results are coming about. However, the results of these experiments are not common fact to the average public and some studies on propylene glycol and vegetable glycerin are 2-3 decades old, making current smokers looking for ways to quit,

skeptical, and making bystanders nervous. The need for funding for new studies to be put out and help educate the average public is increasing at a fast rate, due to the increasing popularity of electronic cigarettes.

Concerns for the users of electronic cigarettes are becoming minimal as more research is being done to support the benefits they provide to the user. However, now that they are becoming more popular, concern is moving from the users to bystanders. As stated before, electronic cigarettes only contain three basic chemicals: Propylene glycol, nicotine (if used), vegetable glycerin, and, at the users' discretion, flavors. Vegetable glycerin is a simple compound and after heated up and smoked, it changes from "glycerin" to "glycerin vapor" and is then metabolized by the body and results in water and carbon dioxide (What, 2015). Propylene glycol has been studied extensively over the last few decades and research is coming to show that is has no harmful effects on the human body in vapor form, and that nearby bystanders would not be in any danger if it was inhaled as a secondhand vapor. The biggest danger for bystanders would be the nicotine content. For those who are using electronic cigarettes without nicotine, by the time the vapor has been exhaled, the vapor is harmless to any nearby bystander. However, without asking the user if there is nicotine is the vapor they are using, it is impossible to identify whether there is nicotine in the exhaled vapor. It's common to find some irritation in the lungs of someone who uses electronic cigarettes because of the frequent act of inhalation. However, since bystanders do not frequently experience the inhalation sensation, mists could be irritating to some individuals (Quick, 2013). Although the majority of the nicotine in the solution will be inhaled and absorbed by the user of the electronic cigarette, for those nearby who may be sensitive to nicotine or vapor, any amount of nicotine of vapor can be an irritant. This is why there is a need to regulate the use of electronic cigarettes in public places, similar or equal to that of what's currently in place for normal cigarettes.

Regulation

The use of electronic cigarettes is banned in currently standing smoke-free venues such as work places, restaurants, and bars in New Jersey, Utah, North Dakota, and Arkansas. All other states have at least one county that has decided to restrict use of electronic cigarettes in the work place, restaurants, bars, and

some gambling halls (U.S. State, 2015). One of the major concerns for the selling of electronic cigarettes regulations is age restriction. Suppliers of electronic cigarettes are making large efforts to educate store owners selling electronic cigarettes on the dangers of addiction and who and when it is appropriate to sell to. The Transportation Security Administration has placed appropriate restrictions on traveling with electronic cigarettes as similar to cellphones, in that they must be off at all times in flight, and fluids must be in bottles and small plastic bags while traveling (Traveler, 2008). They are also only permitted in use when outside or in a smoking lounge. There are no current national regulations on the sales or usage of electronic cigarettes. The FDA has also been making efforts to regulate electronic cigarettes, but nothing has been done as concerns have all been disproven, or proved simply theoretical.

Conclusion

Electronic cigarettes have a vast potential to improve the lives of current smokers who may be interested in making the switch to electronic cigarettes. Many studies have been proven on the effectiveness of electronic cigarettes in regards to ability to aid in the cessation of smoking, and improved health of the user, such as a decrease in chances of lung cancer, developing asthma, and emphysema. Few regulations have been put in place on the usage of electronic cigarettes in public places, and the next step is to encourage the Federal and State governments to put in place regulations on where electronic cigarettes are appropriate and safe to be used for the safety of electronic cigarette users, and for the people around them. If more Americans were educated on electronic cigarettes, support would likely increase, and bills protecting and expanding federal and state regulations would likely be passed. If federal and state regulations for electronic cigarettes were expanded and funding and efforts put toward research were increased, the full potential of electronic cigarettes could be achieved.

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