

## Critique of article: *E-cigarettes should be banned* – Mary Assunta

On 4 October 2015, an article calling for e-cigarettes to be banned in Malaysia was published in Malay Mail Online. The article<sup>1</sup> is reproduced below with comments in boxes.

The screenshot shows the top navigation bar of Malay Mail Online with links for 'FIND LOCAL SERVICES', 'ABOUT US', 'E-PAPER', 'SEARCH', 'CLICK FOR MOBILE SITE', and 'CLICK FOR TRENDING STORIES'. Below this is a Google Digital Courses banner. The article title 'E-cigarettes should be banned' by Mary Assunta is prominently displayed. Social media sharing buttons for Like (26), Share (109), Tweet (58), LinkedIn Share (1), Email (4), and G+ (0) are visible. A small image on the right shows a building with the sign 'CONNAUGHT' and the text 'SUMMER IN LONDON' below it. The date and time 'Sunday October 4, 2015 08:15 PM GMT+8' and the acronym 'ICYMI' are also present.

OCTOBER 4 — I have been following the reports on e-cigarettes and vaping in the media and wish to raise several important points.

Firstly, according to authoritative reports on e-cigarettes, its safety and efficacy in cessation have not been established. The [official report](#) by the World Health Organisation clearly states e-cigarettes are not free from toxicants and they have been approved as “safe” for use.

This is not a reasonable way to frame the issue. Very little we consume is free from toxicants, including all foods, and many medicines and NRT. Coffee for example has at least 19 rodent carcinogens<sup>2</sup>. What matters is that the toxins are at very low levels: in the e-cigarette case the toxins that cause harm in cigarette smoke are either not present or are at levels many times lower than in cigarette smoke, and lower than common occupational exposure limits<sup>3 4</sup>. No-one claims that vaping is 100% safe – it doesn't have to be to make a huge impact on the burden of disease and death caused by smoking. I would recommend reading the evidence review by Public Health England for a balanced account of the risks<sup>5</sup>.

E-cigarettes can only be “approved” if they are classified as something that legally requires approval – most jurisdictions have accepted them as consumer products. Most jurisdictions have general consumer protection rules that do not allow dangerous products onto the market. In the EU, for example, there are 17 consumer protection directives that apply to e-cigarettes. Cigarettes are not “approved as ‘safe’ for use” either.

In the linked document WHO carefully avoided calling for e-cigarettes to be banned:

*ENDS, therefore, represent an evolving frontier, filled with promise and threat for tobacco control. Whether ENDS fulfil the promise or the threat depends on a complex and dynamic interplay among the industries marketing ENDS (independent makers and tobacco companies), consumers, regulators, policy-makers, practitioners, scientists, and advocates.*

So far, there are only signs of promise and no signs of threat. The reason why WHO doesn't recommend a ban is obvious: what government would protect the cigarette trade and restrict consumer choice to only the most dangerous nicotine products, cigarettes?

Their efficacy as a smoking cessation device has not been systematically evaluated yet. The evidence on the effectiveness of e-cigarettes as smoking cessation is limited.

This is a mis-framing. E-cigarettes are not bought or sold as a 'smoking cessation device'. They are recreational products that compete with cigarettes, but do much less harm. A better analogy is snus, where extremely large public health benefits have been achieved<sup>6</sup> without treating snus as a medicine or 'smoking cessation intervention'. Alternatively, they could be compared to low calories Cola – they meet the demand for cola and caffeine, but without the fattening sugar. Because they are not singular interventions, like taking a drug, these products do not really fit with randomised controlled trials. Users acquire them, experiment, change their pattern of use and products over time, migrate gradually from smoking to dual use to vaping only, they are exposed to many uncontrolled real life factors. The problem is with the lack of trials, not that trials show e-cigarettes to be ineffective. The limited trial data on now obsolete devices is still supportive e.g. Cochrane review<sup>7</sup>

*...using an EC containing nicotine increased the chances of stopping smoking long-term compared to using an EC without nicotine. Using an EC with nicotine also helped more smokers reduce the amount they smoked by at least half compared to using an EC without nicotine*

More importantly, the *surveillance* data on what's happening in the real world is very positive, despite efforts of some to paint a negative picture. For example, see ASH's data on the rise of vaping in Britain<sup>8</sup> show 1 million ex-smokers are vapers and use among young people is low and mostly confined to smokers. There is no data anywhere that suggests vaping is the *cause* of increasing smoking.

Secondly, in recent times more research on risks of using e-cigarettes have emerged:

\* E-cigarette vapour can contain cancer-causing [formaldehyde](#) at levels up to 15 times higher than regular cigarettes. The finding was published this year in [New England Journal of Medicine](#).

It's a shame that this study was ever published and has not yet been retracted. The readings you refer to were made in conditions that no vaper would experience for more than an unpleasant instant – so-called dry puff conditions. This happens when too much heat is applied to the liquid by setting the battery voltage too high for the heating coil and liquid flow. In this situation the liquid forms thermal breakdown products, including formaldehyde. But the catch is this – *it tastes disgusting, harsh and acrid*. So vapers stop and change settings, add liquid or puff differently. Peter Hajek compares these measurements to heating toast until it is completely burnt black, measuring the carcinogens and then calculating cancer risk of lifelong diet of blackened toast<sup>9</sup>. Your toaster can produce the toast, but you wouldn't. There is extensive challenge to this result<sup>10</sup>.

\* The [Department of Environmental Health Sciences](#) at Johns Hopkins University: "E-cigarette [vapour](#) alone produced mild effects on the lungs, including inflammation and protein damage."

It is probably worth mentioning that the lungs in question belonged to [mice](#), not people. The second problem is that it did not expose the mice to cigarette smoke, so there is no

indication of how damaging that this is compared to smoking – which is what matters, given that these products are used overwhelmingly by smokers. The e-cigarette expert Konstantinos Farsalinos reviewed this study and concluded there was little of value in it<sup>11</sup>. *“The only conclusions that can be drawn from this study is that e-cigarettes should only be used by smokers as a smoking substitute and that they are by far less harmful than tobacco cigarettes (based on emitting 150 times less radicals). Any other conclusions about the probable effects of e-cigarette use on COPD patients are totally irrelevant.”*

\* The American Lung Association: Early [studies](#) show that e-cigarettes contain nicotine and other harmful chemicals, including carcinogens. A 2014 study found that e-cigarettes with a higher voltage level have higher amounts of formaldehyde.

The early studies that found carcinogens found them at extremely low levels. For example for nitrosamines have generally shown levels in e-cigarettes at least 1000 times lower than in cigarette smoke, and at levels comparable to those found and permitted in medically licensed nicotine replacement therapies. Farsalinos and Polosa summarise the evidence as follows in their 2014 review<sup>12</sup>:

*The estimated daily exposure to nitrosamines from tobacco cigarettes (average consumption of 15 cigarettes per day) is estimated to be up to 1800 times higher compared with e-cigarette use (Table 3):*

As discussed above: high formaldehyde readings can be obtained using lab measurements with high voltages and low liquid flows, but not in a way that humans ever experience. That is also the case with Japanese study referred to here.

\* E-cigarettes make teenagers four times more likely to move on to real smoking, health experts warn. The [study](#) was published in *JAMA Pediatrics*.

This is a mis-statement of these findings. The phrase “e-cigarette *make* teenagers...” (emphasis added) implies that the study showed that e-cigarettes *cause* the smoking. In fact it is an *association* – and not very surprising one either. We would expect people who are inclined to smoke to also be include to use e-cigarettes, through what is known as ‘shared liability’ or common risk factors. The study also suffered from using measurements that were much more like indicators of experimentation. Mike Siegel has provided a good critique of some of the excessive interpretations of this study<sup>13</sup>:

*This is the second in a series of studies which have simply uncovered the unsurprising fact that kids who experiment with e-cigarettes are also likely to experiment with real cigarettes, but which have incorrectly concluded that e-cigarette experimentation leads to "traditional cigarette smoking.*

Siegel also draws the conclusion from this...

*We need to stop drawing predetermined conclusions and drawing conclusions that are inconsistent with the actual data. Not only does this approach fail to advance children's health, but it also threatens the credibility and reputation of the tobacco control movement, deceives the public, and harms the public's health in the long run.*

According to the [California Department of Health](#), the e-cigarette heats e-liquid that generally contains nicotine, flavourings, additives, and propylene glycol. The heated e-liquid forms an aerosol that is inhaled by the user.

The aerosol has been found to contain toxic chemicals like formaldehyde, lead, nickel, and acetaldehyde, all of which are chemicals known to cause cancer, birth defects, and other reproductive harm. These chemicals travel through the circulatory system to the brain and all organs.

This is very misleading. When it comes to health risks we should remember the phrase “*the dose makes the poison*”. Simply detecting tiny amounts of toxic substances does not establish a risk. Nor does it provide proper context unless compared to cigarette smoke. In each of the cases described here, the concentrations found were exceedingly low – and we should expect them to get lower as the technology progresses. Even if there are residual concerns, that should be a matter for regulation, not the basis for a ban.

The aerosol also contains high concentrations of ultrafine particles that are inhaled and get trapped in the lungs.

This is also misleading. The ‘ultrafine particles’ are in fact tiny droplets of aerosol liquid. They do not get trapped in the lungs in the way that solid particle from say diesel engines would. Because they are not toxic, unlike diesel or cigarette smoke particles, they do not cause any damage and are absorbed through the lungs or exhaled. I have discussed the scare stories about ‘ultrafine particles’ at some length: *Scientific sleight of hand: constructing concern about ‘particulates’ from e-cigarettes*<sup>14</sup>.

E-liquids are available in numerous candy and fruit flavours, including bubble gum, cherry and chocolate, which are especially appealing to youth and children who may accidentally ingest them.

It is often asserted, as if it is obvious, that flavours with childish characteristics will appeal to adolescents. There is no evidence for this, just assertion, and it is actually counter-intuitive: most adolescents are imitating adult behaviour, not reinforcing their status as children. The one study<sup>15</sup> that has looked at the preferences of young people for e-cigarette flavours found extremely low interest. Teenagers were asked to rate their interest on a scale of 0-10 in using e-cigarettes and were offered a list of flavours. They reported minimal interest (average =0.41 out of 10), much less than adult smokers (1.73 out of 10) and interest did not vary much across flavours. To the extent that any preferences were revealed among teens, ‘Single Malt Scotch’ and ‘Classic Tobacco’ were top.

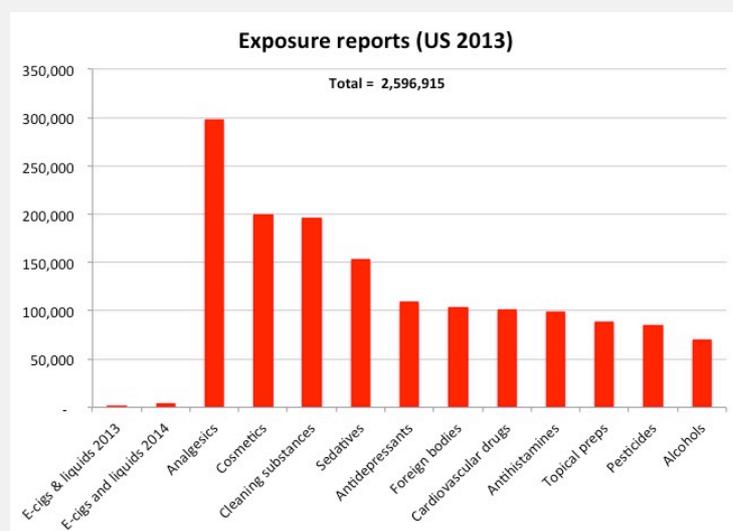
Many household products – medicines, cleaning products, cosmetics would be harmful if swallowed. There are simple ways to reduce the risk of ingestion that do not involve banning: for example used of a standard requiring tamper-resistance. Such a standard exists – ISO8317<sup>16</sup>.

The vaping community has ignored the problem of accidental ingestion — even a small amount of e-liquid may be lethal to a child. E-cigarette cartridges can leak and are not equipped with child-resistant caps, creating a potential source of poisoning.

The US Center for Disease Control [reports](#) the number of calls to poison centres involving e-liquids rose from one per month in 2010, to 215 per month in 2014. More than half of the calls to poison centres about e-liquids involved children under age 5 years.

It is important to put this in context. Actual poisoning incidents are very rare – and not the same as calls to poison centers. It is also possible to have a rapid rise in calls, reflecting growth in the product, but this can be from a low base and small in absolute terms.

When stating making statements about calls to poison centres, they should be put in context. The chart below shows the 2013 poison data for several classes of call, alongside the 2013 and 2014 data for e-cigarettes and liquids<sup>17</sup>. The calls for medicine, cleaning products and cosmetics vastly exceed those for e-cigarettes and liquids.



Calls for e-cigarettes and nicotine liquids were 1,543 in 2013 and 3,957 in 2014, respectively just 0.06% and 0.15% of the total exposure calls. Table 17A shows calls for analgesics (298,633), cosmetics (199,838), cleaning substances (196,183) etc.

Thirdly, vaping **renormalises** smoking. This has the potential to roll back years of anti-smoking campaign efforts of both the Ministry of Health and health professionals to educate the public on the dangers of smoking. Besides it will pose enforcement problems in public places that already have no-smoking zones established.

There is no evidence at all from anywhere that vaping normalises smoking. If anything it will be normalising vaping an alternative to smoking, encouraging more smokers to try an alternative. Why would one thing normalise something else? The most thorough survey in the world, the Smoking Toolkit Survey for England<sup>18</sup>, concluded in January 2015, that:

*Rates of quitting smoking are higher than in previous years. E-cigarettes may have helped approximately 20,000 smokers to stop last year who would not have stopped otherwise.*

To make the claim that vaping normalises smoking, an idea that runs counter to common sense, some evidence is needed – but there is none.

Fourthly, the pharmaceutical industry that normally promotes a variety of smoking cessation devices has not bought into e-cigarettes as a cessation device. Instead, transnational tobacco companies have bought e-cigarettes business and are promoting and marketing them as less harmful.

This is irrelevant to public health. The pharmaceutical companies make medicinal smoking cessation products. E-cigarettes are consumer products that compete directly with cigarettes – and it is not surprising that pharmaceutical companies would not wish to go into this ‘recreational’ market. The main risk from tobacco companies arises from them dominating the market in e-cigarettes – this will happen if there are unnecessarily high regulatory burdens placed on e-cigarettes. Unfortunately, this is exactly what the tobacco control community is encouraging. See David Swenor’s article: Big Tobacco’s Little Helpers<sup>19</sup> pointing out how tobacco control activists unwittingly assist Big Tobacco.

If e-cigarettes are indeed a less harmful alternative, the tobacco companies should **recall** their more harmful regular cigarettes and stop selling them.

This is either a rhetorical flourish or plain naïve. The best that a tobacco company to do is to make a transition to reduced risk products at the greatest possible rate, consistent with changing consumer demand. If a company did what is suggested here it would destroy large amounts of its shareholders’ capital and other companies would take over selling cigarettes – the CEO would be fired and replaced with someone who continued to sell cigarettes – a legal product in a taxed and regulated market. The public health community should be pushing the tobacco companies to change their business to sell products that cause little or no harm – like snus or e-cigarettes, not banning them. Banning e-cigarettes while allowing sales of cigarettes to continue does not seem the most obvious way to transform the tobacco industry so that its products kill fewer people.

**Vaping is not harm-free.** Vapers, who are not experts on e-cigarettes, have run away with extolling its merits. The risks of vaping and e-cigarettes have been downplayed and even ignored.

It would be wise to get to know vapers much better. They know that they are not entirely safe, just that they are much safer than smoking, give immediate health benefits and save them money in many cases. Many vapers are in fact experts on e-cigarettes, many have better knowledge than leading figures in tobacco control, and many would understand the points made in this critique. They have not downplayed risks but worked hard to correct misleading information coming from public health figures determined to exaggerate risks and downplay benefits.

More importantly, anyone involved in public health should build a close and respectful relationship with the ‘at risk’ population. They are quite rightly beginning to expect this, and do not believe that important decisions about their health should be taken by remote bureaucrats or activist NGOs without their involvement – they increasingly echo the HIV/AIDS activists in saying “nothing about us, without us”<sup>20</sup>. Public health NGOs need to be aware of the scale of the discontent with their actions – for example, there are now 46,000 members of the MOVE facebook page for vaping activism in Malaysia.

Many countries have already **banned** the sale of e-cigarettes, namely Brunei, Thailand, Cambodia, Singapore and Brazil. Japan and Australia have banned e-cigarettes with nicotine. The decision for the Ministry of Health is clear — e-cigarettes must be banned.

This is not an argument for Malaysia or anywhere else to ban e-cigarettes. A ban would have a number of highly negative effects:

- Restricts legal consumer choice to only the most dangerous nicotine products, cigarettes. This is a completely unethical idea with no precedents in any other fields
- Normalises smoking as the dominant way to use nicotine. Over one billion people use nicotine worldwide, so why signal that it should be used by burning tobacco – with consequent impacts for health?
- Protects the cigarette trade from competition, rewarding the worst, most unresponsive tobacco companies and destroying small businesses set up to compete with Big Tobacco.
- Encourages people to engage in illegal commerce to purchase and supply products that are beneficial to health.
- The opportunity to regulate the trade is lost as the market is supplied via black or grey markets and internet suppliers.

*\* Mary Assunta is senior policy adviser of the Southeast Asia Tobacco Control Alliance (SEATCA).*

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