PETEL-PETEL/ 15
Review Date: Current until revised

Petrol filling stations – Safety implications
Electronic cigarettes

FOREWORD
This guidance supersedes and expands on all guidance given in previous PETELs on the subject, and forms part of a series of PETELs issued as part of the PELG-PETEL series from 2012 onwards by the Petroleum Enforcement Liaison Group (PELG), a health and safety advisory committee hosted by the Energy Institute. It comprises representatives of the Retail Petroleum Industry, the Petroleum Enforcement Authorities (PEAs), UKLPG and the Environment Agency, with technical support from the Health and Safety Executive.

PETELs are a mechanism for PELG to promulgate advice, guidance and good practice with the purpose of:
- Facilitating appropriate and consistent enforcement by PEAs; and/or
- Advising duty-holders on how to comply with the law.

The target audience for this PETEL are the operators or retail petrol filling petrol filling stations. The guidance will also be of interest to the inspectors or PEAs.

Important disclaimer
This guidance has been produced and reviewed as described in the foreword. The Energy Institute (EI) shall have no liability arising out of or in connection with this guidance or its use or application whether in contract, tort (including but not limited to negligence), breach of statutory duty, under statute, by reason of misrepresentation or otherwise.

INTRODUCTION
1. This PETEL gives guidance on the approach which site operators should take with regard to the use of electronic cigarettes (e-cigarettes) in the hazardous areas of their premises. The decision as to whether the use of e-cigarettes by staff or customers in other areas of their sites should be prohibited as a health and welfare related issue for the employer to take.

BACKGROUND
2. Electronic cigarettes (e-cigarettes) or electronic nicotine delivery systems (ENDS) have become increasingly popular since the mid-2000s

3. E-cigarettes are battery-powered products that typically looked like real cigarettes when first introduced onto the market. Each e-cigarette consists of a cartridge of liquid nicotine, the atomizer (or heating element), a rechargeable battery, and electronics. They turn nicotine, flavour and other chemicals into a vapour that is inhaled by the user. The exhaled vapour can be seen and the tip of the e-cigarette
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on some models have a light emitting diode (LED) which lights when the user inhales, thereby resembling a real cigarette.

4. Over the last decade, however, as the e-cigarette market has expanded, product designs and ingredients have evolved, making it difficult to arrive at any standard definition. Today, e-cigarettes come in hundreds of brands, including rechargeable and disposable models, and a variety of shapes mimicking common products, such as flash drives, pens, and lipstick.

5. As the user inhales a vapour and not smoke, the conventional cigarette terms of ‘smoker’ and ‘smoking’ are replaced with ‘vaper’ and vaping’ so as to distinguish what may perceived to be a safer practice from both health and fire safety perspectives.

FIRE AND EXPLOSION RISKS

6. The use of e-cigarettes does not present the fire risks associated with conventional cigarettes and their associated smoking materials, as there are no naked flames (matches or lighters), no burning tobacco and no hot ash. However, the workings of an e-cigarette does involve the generation of heat (the electrical resistance (1-3 ohms) in the coil) to vaporise the liquid chemical with the energy source being drawn from a battery (typically, 3.7 volt).

7. At the time of drafting this PETEL it is not known if there are any confirmed incidents where the vaping of e-cigarettes has been attributed as the main cause of any fires or explosions. There have however, been a number of incidents where e-cigarettes have exploded when the battery is being recharged. Investigations into these events have generally concluded that the incorrect charger (not the model provided or recommended by the e-cigarette manufacturer) was being used or where the battery was defective.

8. There are two possible sources of ignition from an e-cigarette when in use (vaping), a spark from the battery and the heat from the coil (heating element). As the auto-ignition temperature of petrol is 246–280°C, there is little likelihood of the coil, with an operating temperature of 40 to 65°C, igniting petrol vapours. It is not known if any research has been carried out into the possibility of a spark from an e-cigarette battery igniting flammable vapours/gases. However, studies into mobile telephones have generally concluded that while it may be theoretically possible for a spark from a cell phone battery to ignite gas or vapour under very precise conditions, there is no documented incident where the use of a mobile phone was found to be the cause of a fire or explosion at a petrol station.
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CONFUSION

9. The appearance of a motorist vaping whilst refuelling a vehicle may cause confusion to the filling station attendant who may be unable at a distance to distinguish an e-cigarette from a normal cigarette. This in turn could lead to a confrontation with the motorist who sees no wrong in his/her activity, whilst if no action is taken, other motorists may perceive a relaxed situation where they might be tempted to ignore the normal prohibition on petrol filling stations.

CONCLUSION

10. Smoking has a long history of being strictly prohibited in buildings and sites where highly flammable liquids and gases are manufactured, stored and handled. With the exception of a few individuals, the reason for the smoking ban at filling stations is well understood and willingly observed by members of the public.

11. It therefore stands to reason that any person vaping an e-cigarette on the forecourt will be the cause of consternation to customers dispensing fuel as they may not disassociate the fire risks from that of a conventional cigarette. Vaping on the forecourt could also result in confrontations and the disruption to business by the forecourt controller switching-off the dispensers.

12. Although the risk of an e-cigarette igniting petrol vapour is negligible, they are items of electronic equipment for which there is no record of any brands/types having been certified for use in Zone 1 or 2 hazardous areas; nor is it likely they ever will be. Recently approved amendments to the 2015 edition of the European Agreement concerning the International Carriage of Dangerous Goods by Road (ADR) include the use of e-cigarettes in the prohibition of smoking by the addition of the following words, ‘This prohibition of smoking is also applicable to the use of electronic cigarettes’.

13. In order to promote a consistent approach taken by site operators on the issue of e-cigarettes, it is recommended that the prohibition on smoking is extended to cover e-cigarettes, as they are not certified for use in hazardous areas. Appropriate signage is encouraged to avoid any misunderstanding occurring.