

Mossmorran: Analysis of benzene data 2014

Background

A number of short-term monitoring assessments have been carried out in the vicinity of the Mossmorran complex, and all have shown that atmospheric pollution is well below the standards that have been set to protect human health. The recent long-term study (commissioned by Kennedy Renewables) is particularly significant, because it covers a period of 3-years, during which time benzene was measured at three locations: Watson Street Cowdenbeath, Watters Crescent Lochgelly and Little Raith Farm. The measurements are representative of a two weekly exposure period that ran continually from the 31 January 2011 to 29 November 2013.



Figure 1: Location of the monitoring sites

This recent information has enabled the regulators to compare the measured levels directly against long-term Scottish, UK and EU standards that are in-place to protect public health.

Air quality standards for benzene

- The Scottish air quality objective for benzene is 1 part per billion (ppb) measured as a running annual mean.
- The UK air quality objective and the EU limit value is 1.54 ppb, measured as an annual mean.

Summary of findings

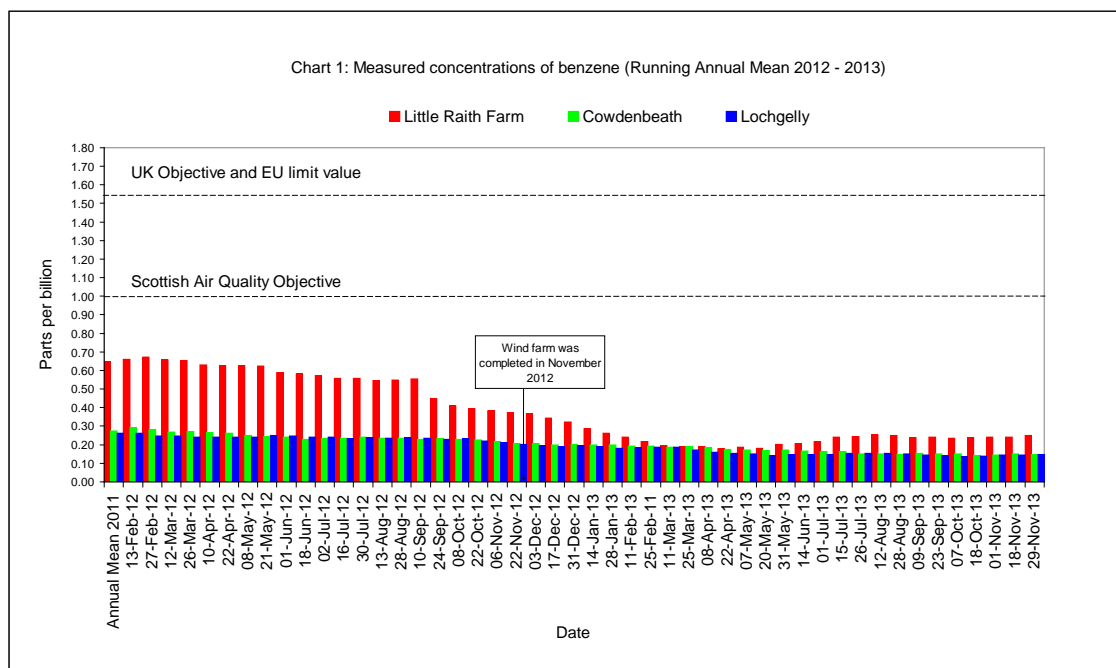
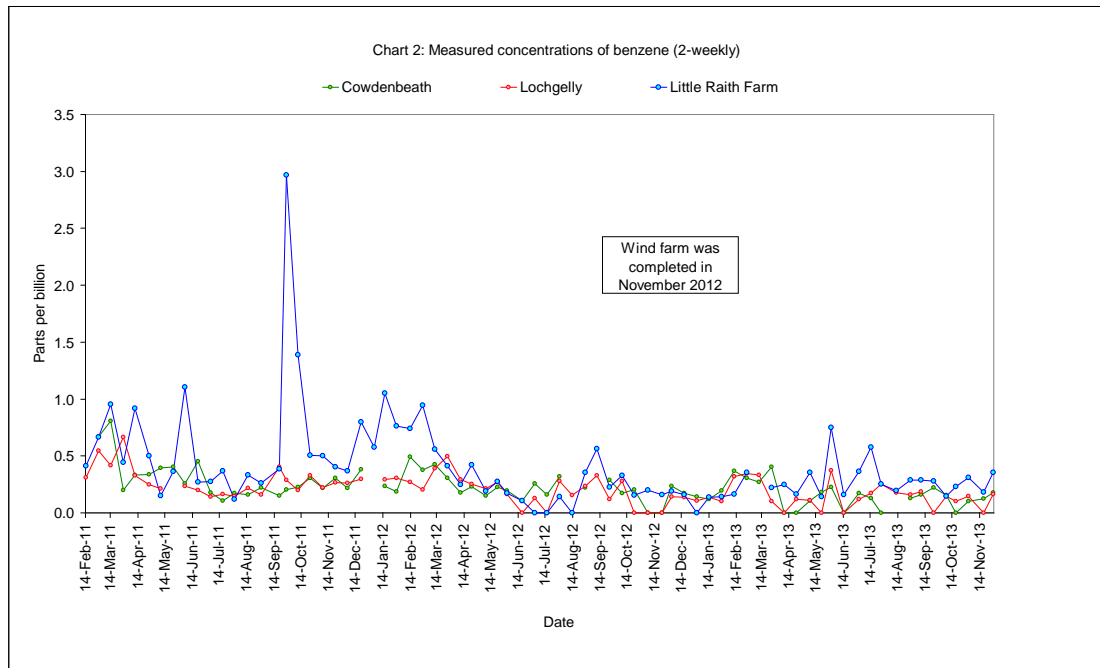


Chart 1 shows that the running annual mean concentrations of benzene in Cowdenbeath and Lochgelly were almost identical and they show little fluctuation. The running annual mean concentrations were also seen to drop steadily from 0.26 ppb in January 2012, to 0.15 ppb at the end of November 2013. These levels are well below the Scottish air quality objective of 1 part per billion (ppb) and are similar to concentrations of benzene that you would expect to find in a typical rural environment ¹.

Chart 1 shows that the running annual mean concentrations for Little Raith Farm were generally higher than those for Cowdenbeath and Lochgelly, as a result of the elevated levels of benzene that existed between February 2011 and March 2012 (see Chart 2). The running annual mean concentrations were seen to peak at 0.67 ppb in February 2011, but dropped to a level that was equivalent to Cowdenbeath and Lochgelly (0.20 ppb) by March 2013. There was a very slight increase during July 2013, after which time the running annual mean remained steady at 0.25 ppb (1 ppb above Cowdenbeath and Lochgelly).

1: Health Protection Agency: Compendium of Chemical Hazards, benzene. Version 4. 2011



A single peak measurement of 3 ppb of benzene was measured at the end of September 2011, at the Little Raith site, but it did not result in an exceedance of the running annual mean objective. This single measurement is relatively minor when compared to potential multiple exposures of 10 ppb at the side of a typical busy road, or 14 ppb inside a car.

Is the wind farm affecting the air quality?

Concerns have been raised with Fife Council and the Scottish Environment Protection Agency (SEPA) regarding the effect of wind turbines on emissions from the Mossmorran complex. Members of the public have asked whether the change in wind pattern resulting from the operation of the turbines could concentrate pollutants and affect neighbouring communities. The Little Raith wind farm became operational at the end of November 2012 and there is no evidence to suggest that the wind turbines are having a detrimental impact on air quality in Cowdenbeath or Lochgelly.

Additional information

These recent measurements are similar to those obtained in 2008, when the National Physical Laboratory (NPL) measured ambient levels of benzene before, during and after a scheduled flaring event. BP Production and Exploration also routinely measure a range of hydrocarbons at locations along the River Forth and the annual

mean concentrations of benzene in 2012 ranged between 0.2 ppb to 0.3 ppb; these are also well below the 1 ppb air quality objective and typical of a rural location.

The Health Protection Agency has published a Compendium of Chemical Hazards (2011, Version 4), which includes a detailed section on benzene exposure. The guidance states “For the majority of the population, smoking and propinquity to road traffic are the predominant factors affecting daily exposure (Table 1). Ambient air concentrations of benzene within dwellings tend to be around twice as high as comparable outdoor concentrations and smoking indoors can make a significant contribution to the concentration of benzene”.

In summary

The long-term measurements have shown that the ambient concentrations of benzene at the monitoring sites in Cowdenbeath, Lochgelly and Little Raith Farm are comfortably below the Scottish, UK and EU air quality standards that are in place to protect human health.

In addition, the Little Raith wind farm became operational at the end of November 2012 and there is no evidence to suggest that the wind turbines are having a detrimental impact on air quality.

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