

Cancer Mortality Rates Surrounding Mossmorran Chemical Plant

Clare Campbell and Bryan Archibald, Public Health NHS Fife

- Background

This work was carried out in 2011 in response to a freedom of information request made to NHS Fife looking for 'cancer mortality rates surrounding Mossmorran Chemical Plant especially interested in Cowdenbeath, Lochgelly, Lochore and Ballingry' (FOI1290).

- Methodology

A geographical area was created by selecting inter zones (a national small area statistical geography of which there are 103 in Fife) that lie within a 5km radius of the Mossmorran plant.

The selected inter zones are shown in Map 1 and are: Lochore & Crosshil, Lochgelly East, Lochgelly West and Lumphians, Cowdenbeath North, Cowdenbeath South, Hill of Beath, Kelty East, In addition interzones in Kelty (West) and Ballingry have been included as these are surrounded on two or more sides by inter zones that are within the 5km radius. To take into account the small number of events that may occur within these inter zones each year they have been combined and presented as the 'Defined Area'.

Figures have been presented for the Defined Area, Dunfermline and West Fife Community Health Partnership (DWF CHP), Fife, 'Deprivation Adjusted' Fife and Scotland. Data has been presented as three year rolling composites from 2000-2002 to 2007-2009 to allow for small number of events. Data has been presented for all cancer mortality (all ages) and is shown as age- sex standardised rates per 100,000 population.¹

'Deprivation Adjusted' Fife figures have been used due to the defined area being more relatively deprived when compared with Fife. Fife has been adjusted to fit the same deprivation profile by applying the proportion of the defined area which fits into each Fife SIMD2009 quintile to the observed number of deaths within each of the local SIMD2009 quintiles to obtain the expected number of deaths if Fife had the same deprivation profile as the defined area.

- Results

The standardised rates for each of the areas are shown in Table 1 and Chart 1. The 'Defined Area' had higher rates of cancer mortality than Fife and DWF CHP in each of the time periods shown and higher rates than Scotland in 5 of the 8 time periods shown (Chart 1). The 'Defined Area' had lower

¹ This gives the overall rate that would have occurred in the local population if it had the same age-sex profile as the standard population (in this case Europe). It allows valid comparisons to be made between local areas with differing population age-sex structures

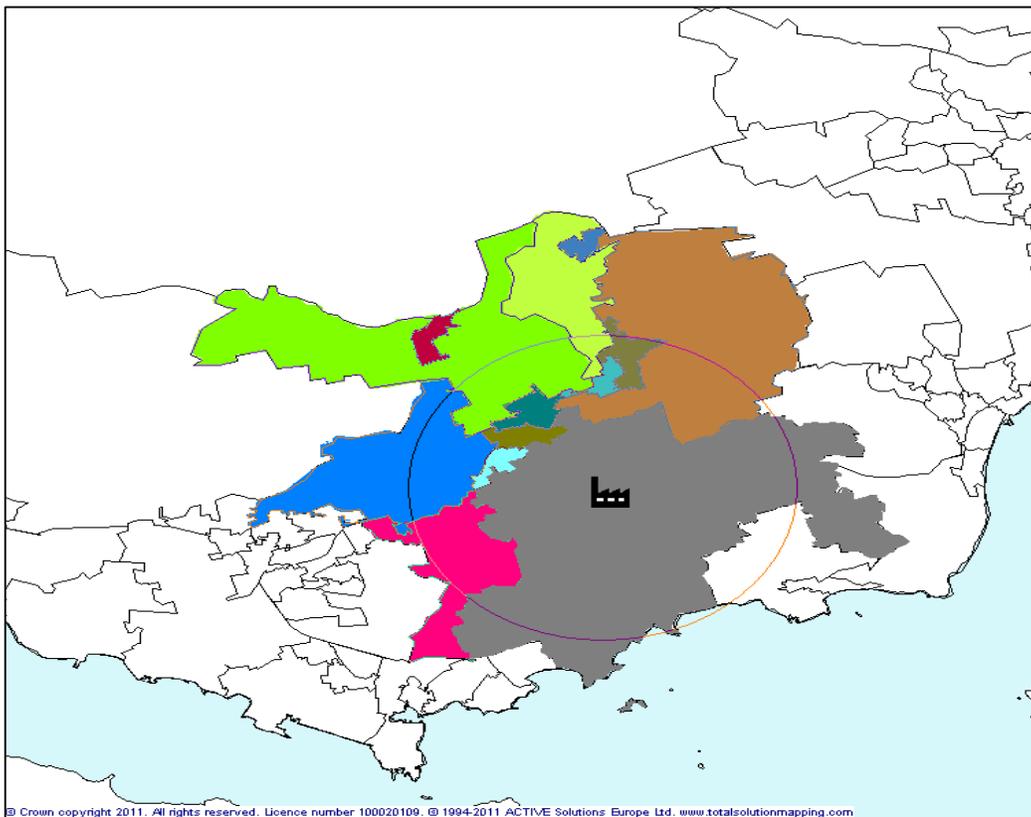
standardised rates of all cancer mortality than 'deprivation adjusted Fife' for each of the periods shown except the most recent (2007-09).

However when taking into account confidence intervals associated with these rates there were no significant differences between the 'defined area' and the other areas shown in each time period including the most recent (shown in Chart 2).²

The most commonly occurring cancer in 2007-09 in all areas shown was trachea, bronchus and lung cancer. This type of cancer is strongly related to smoking which is known to be more widespread in areas of higher deprivation.

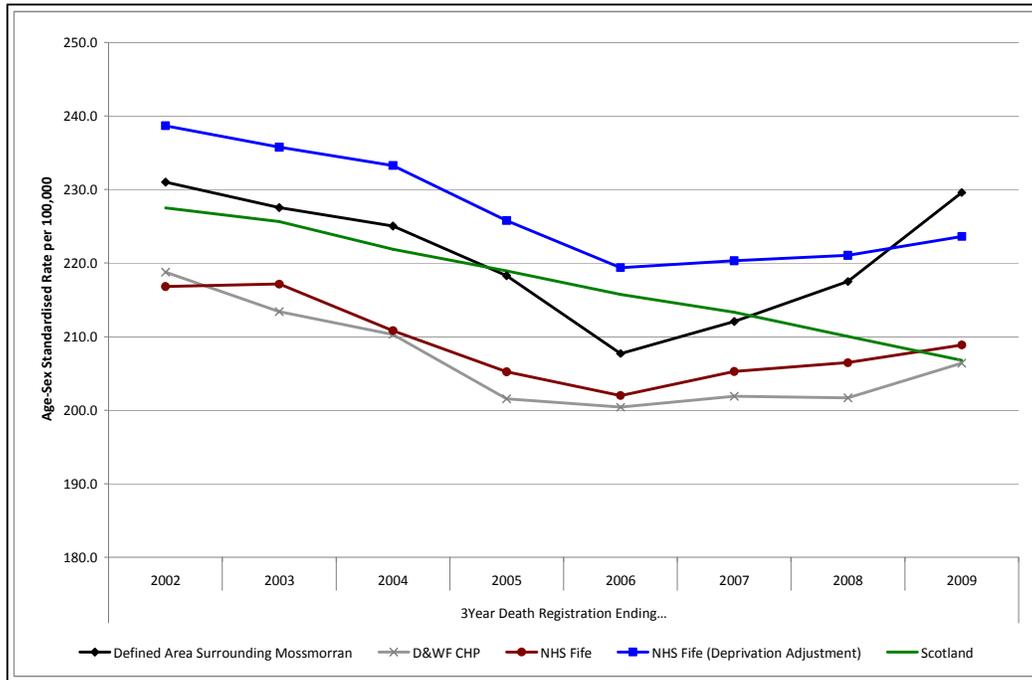
- Maps and Charts

Map 1: Defined Area



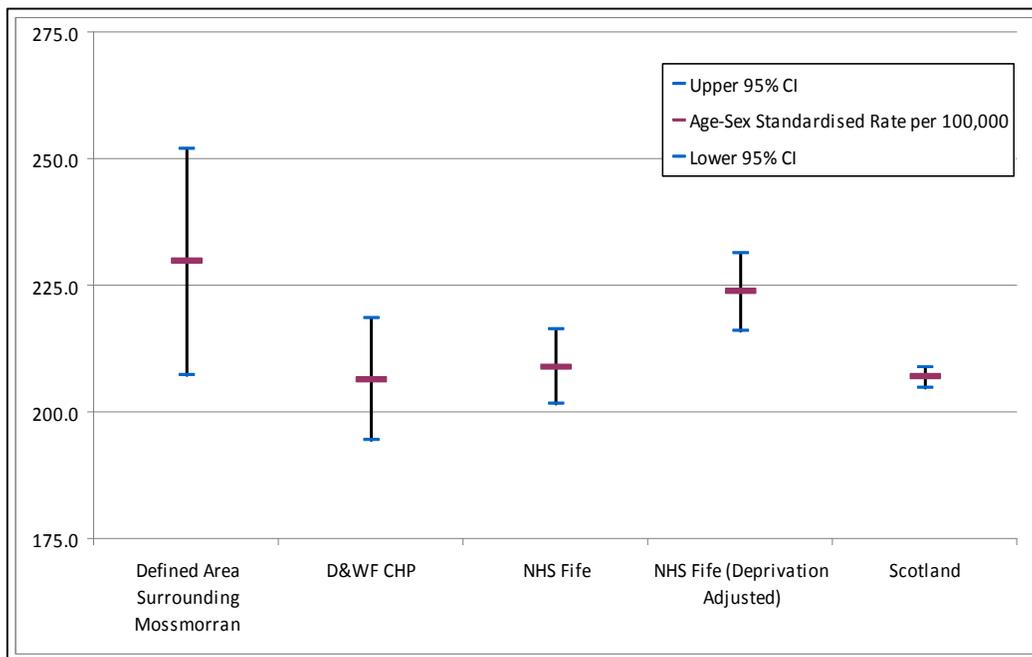
² Results can be affected by random variations which occur when there are small numbers of events and over time. A confidence interval is a range of values that is normally used to describe the uncertainty around a rate and provide an upper and lower value within which the underlying (true) value is likely to lie, in this case 95% of the time. Differences between areas are only significant if confidence intervals do not overlap.

Chart 1: Age-sex standardised 3 year composite cancer mortality rates; 2000-2002 to 2007-2009



Source: Information Services NHS Fife

Chart 2: Cancer Mortality Standardised Rates and Confidence Intervals; 2007-2009



Source: Information Services NHS Fife