**Table 2A Mortality by Cause and Exposure (analysis restricted to 12,598 men who were only ever exposed at one level)**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Cause of death** | **ICD Codes** |  | **Exposure** |  | **All Subjects** |
|  | **Background** |  | **Low/Moderate** |  | **High** |  |
| **ICD 9** | **ICD 10** |  | **Observed** | **Expected** | **SMR** | **95% CI** |  | **Observed** | **Expected** | **SMR** | **95% CI** |  | **Observed** | **Expected** | **SMR** | **95% CI** |  | **Observed** | **Expected** | **SMR** | **95% CI** |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| All cancers | 140-208 | C00-C97 |  | 660 | 676.3 | 0.98 | 0.90, 1.05 |  | 619 | 569.1 | 1.09 | 1.00, 1.18 |  | 701 | 543.7 | 1.29 | 1.20, 1.39 |  | 1980 | 1789.2 | 1.11 | 1.06, 1.16 |
| Circulatory disease | 390-459 | I00-I99 |  | 910 | 984.2 | 0.92 | 0.87, 0.99 |  | 812 | 827.5 | 0.98 | 0.91, 1.05 |  | 930 | 858.7 | 1.08 | 1.01, 1.15 |  | 2652 | 2670.4 | 0.99 | 0.96, 1.03 |
| Respiratory disease | 460-519 | J00-J99 |  | 257 | 279.4 | 0.92 | 0.81, 1.04 |  | 254 | 234.0 | 1.09 | 0.96, 1.23 |  | 350 | 242.2 | 1.44 | 1.30, 1.60 |  | 861 | 755.7 | 1.14 | 1.06, 1.22 |
| Digestive diseases | 008-009, 520-579 | K00-K93 |  | 84 | 79.9 | 1.05 | 0.84, 1.30 |  | 75 | 68.0 | 1.10 | 0.87, 1.38 |  | 89 | 61.1 | 1.46 | 1.17, 1.79 |  | 248 | 209.0 | 1.19 | 1.04, 1.34 |
| Injury and poisoning | 800-999 | U509, V01-Y89 |  | 104 | 89.3 | 1.16 | 0.95, 1.41 |  | 98 | 77.0 | 1.27 | 1.03, 1.55 |  | 60 | 65.9 | 0.91 | 0.69, 1.17 |  | 262 | 232.2 | 1.13 | 1.00, 1.27 |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| All Causes | 000-999 | A00-R99, U509, V01-Y89 |  | 2209 | 2294.6 | 0.96 | 0.92, 1.00 |  | 2010 | 1932.9 | 1.04 | 0.99, 1.09 |  | 2294 | 1924.0 | 1.19 | 1.14, 1.24 |  | 6513 | 6151.5 | 1.06 | 1.03, 1.08 |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |

**Table 3A Mortality from Cancer by Exposure (analysis restricted to 12,598 men who were only ever exposed at one level)**

| **Cancer** | **ICD Codes** |  | **Exposure** |  | **All Subjects** |
| --- | --- | --- | --- | --- | --- |
|  | **Background** |  | **Low/Moderate** |  | **High** |  |
| **ICD 9** | **ICD 10** |  | **Observed** | **Expected** | **SMR** | **95% CI** |  | **Observed** | **Expected** | **SMR** | **95% CI** |  | **Observed** | **Expected** | **SMR** | **95% CI** |  | **Observed** | **Expected** | **SMR** | **95% CI** |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Lip | 140 | C00 |  | 0 | 0.2 | 0.00 | 0.00, 21.13 |  | 0 | 0.1 | 0.00 | 0.00, 24.65 |  | 2 | 0.2 | 11.52 | 1.39, 41.60 |  | 2 | 0.5 | 4.02 | 0.49, 14.51 |
| Tongue | 141 | C01-C02 |  | 1 | 2.5 | 0.40 | 0.01, 2.25 |  | 2 | 2.1 | 0.95 | 0.11, 3.42 |  | 2 | 1.8 | 1.10 | 0.13, 3.97 |  | 5 | 6.4 | 0.78 | 0.25, 1.82 |
| Mouthb | 143-145 | C03-C06 |  | 4 | 2.2 | 1.81 | 0.49, 4.63 |  | 0 | 1.9 | 0.00 | 0.00, 1.97 |  | 2 | 1.6 | 1.22 | 0.15, 4.40 |  | 6 | 5.7 | 1.05 | 0.38, 2.28 |
| Pharynxb | 146-149.1 | C09-C14.2 |  | 6 | 4.9 | 1.23 | 0.45, 2.68 |  | 3 | 4.1 | 0.73 | 0.15, 2.12 |  | 6 | 3.5 | 1.70 | 0.62, 3.69 |  | 15 | 12.5 | 1.20 | 0.67, 1.97 |
| Oesophagus | 150 | C15 |  | 30 | 32.2 | 0.93 | 0.63, 1.33 |  | 24 | 27.1 | 0.89 | 0.57, 1.32 |  | 38 | 23.3 | 1.63 | 1.16, 2.24 |  | 92 | 82.5 | 1.12 | 0.90, 1.37 |
| Stomach | 151 | C16 |  | 51 | 44.9 | 1.14 | 0.85, 1.49 |  | 42 | 37.9 | 1.11 | 0.80, 1.50 |  | 58 | 41.1 | 1.41 | 1.07, 1.82 |  | 151 | 123.9 | 1.22 | 1.03, 1.43 |
| Small intestineb | 152 | C17 |  | 2 | 1.4 | 1.47 | 0.18, 5.30 |  | 0 | 1.1 | 0.00 | 0.00, 3.21 |  | 2 | 1.0 | 1.93 | 0.23, 6.99 |  | 4 | 3.5 | 1.13 | 0.31, 2.89 |
| Large intestine | 153 | C18 |  | 36 | 44.1 | 0.82 | 0.57, 1.13 |  | 31 | 37.0 | 0.84 | 0.57, 1.19 |  | 43 | 35.4 | 1.21 | 0.88, 1.64 |  | 110 | 116.6 | 0.94 | 0.78, 1.14 |
| Rectum | 154 | C19-C21 |  | 36 | 28.8 | 1.25 | 0.87, 1.73 |  | 33 | 24.3 | 1.36 | 0.93, 1.91 |  | 31 | 23.3 | 1.33 | 0.90, 1.89 |  | 100 | 76.5 | 1.31 | 1.06, 1.59 |
| Liverc  | 155.0-155.1 | C22 |  | 13 | 9.5 | 1.36 | 0.73, 2.33 |  | 8 | 8.0 | 1.00 | 0.43, 1.97 |  | 11 | 6.4 | 1.72 | 0.86, 3.09 |  | 32 | 23.9 | 1.34 | 0.92, 1.89 |
| Gall bladderc | 156 | C23-C24 |  | 2 | 2.5 | 0.80 | 0.10, 2.90 |  | 3 | 2.1 | 1.43 | 0.30, 4.19 |  | 2 | 2.2 | 0.92 | 0.11, 3.31 |  | 7 | 6.8 | 1.03 | 0.42, 2.13 |
| Pancreas | 157 | C25 |  | 29 | 29.4 | 0.99 | 0.66, 1.42 |  | 29 | 24.7 | 1.17 | 0.78, 1.68 |  | 24 | 23.0 | 1.04 | 0.67, 1.55 |  | 82 | 77.1 | 1.06 | 0.85, 1.32 |
| Nose and nasal sinuses | 160 | C30-C31 |  | 1 | 0.9 | 1.08 | 0.03, 6.05 |  | 0 | 0.8 | 0.00 | 0.00, 4.72 |  | 0 | 0.8 | 0.00 | 0.00, 4.67 |  | 1 | 2.5 | 0.40 | 0.01, 2.23 |
| Larynx | 161 | C32 |  | 2 | 6.0 | 0.33 | 0.04, 1.20 |  | 8 | 5.1 | 1.57 | 0.68, 3.09 |  | 10 | 4.9 | 2.06 | 0.99, 3.79 |  | 20 | 16.0 | 1.25 | 0.76, 1.93 |
| Lung | 162 | C33-C34 |  | 218 | 209.8 | 1.04 | 0.91, 1.19 |  | 215 | 176.9 | 1.22 | 1.06, 1.39 |  | 287 | 180.2 | 1.59 | 1.41, 1.79 |  | 720 | 566.9 | 1.27 | 1.18, 1.37 |
| Bone | 170 | C40-C41 |  | 0 | 1.4 | 0.00 | 0.00, 2.62 |  | 1 | 1.2 | 0.82 | 0.02, 4.59 |  | 4 | 1.2 | 3.35 | 0.91, 8.57 |  | 5 | 3.8 | 1.31 | 0.43, 3.06 |
| Soft tissue sarcomab | 171 | C46, C47, C49 |  | 2 | 2.5 | 0.79 | 0.10, 2.85 |  | 1 | 2.1 | 0.47 | 0.01, 2.60 |  | 2 | 1.8 | 1.12 | 0.14, 4.04 |  | 5 | 6.5 | 0.77 | 0.25, 1.80 |
| Melanomab | 172 | C43 |  | 6 | 6.5 | 0.92 | 0.34, 2.00 |  | 5 | 5.5 | 0.91 | 0.29, 2.11 |  | 1 | 4.2 | 0.24 | 0.01, 1.32 |  | 12 | 16.3 | 0.74 | 0.38, 1.29 |
| Other skinb | 173 | C44 |  | 1 | 1.8 | 0.54 | 0.01, 3.03 |  | 1 | 1.5 | 0.65 | 0.02, 3.60 |  | 2 | 1.5 | 1.32 | 0.16, 4.76 |  | 4 | 4.9 | 0.82 | 0.22, 2.09 |
| Breast | 175 | C50 |  | 1 | 0.7 | 1.35 | 0.03, 7.54 |  | 1 | 0.6 | 1.60 | 0.04, 8.93 |  | 1 | 0.6 | 1.61 | 0.04, 8.99 |  | 3 | 2.0 | 1.51 | 0.31, 4.42 |
| Prostate | 185 | C61 |  | 38 | 61.1 | 0.62 | 0.44, 0.85 |  | 51 | 50.9 | 1.00 | 0.75, 1.32 |  | 35 | 48.2 | 0.73 | 0.51, 1.01 |  | 124 | 160.2 | 0.77 | 0.64, 0.92 |
| Testisb | 186 | C62 |  | 0 | 1.5 | 0.00 | 0.00, 2.40 |  | 3 | 1.3 | 2.31 | 0.48, 6.76 |  | 1 | 1.0 | 0.95 | 0.02, 5.31 |  | 4 | 3.9 | 1.03 | 0.28, 2.64 |
| Other genitalb | 187 | C63 |  | 0 | 0.7 | 0.00 | 0.00, 5.57 |  | 1 | 0.6 | 1.80 | 0.05, 10.02 |  | 1 | 0.6 | 1.65 | 0.04, 9.19 |  | 2 | 1.8 | 1.10 | 0.13, 3.96 |
| Bladderb | 188, 189.2-189.9 | C66-C68 |  | 35 | 25.4 | 1.38 | 0.96, 1.92 |  | 20 | 21.2 | 0.94 | 0.58-1.45 |  | 23 | 21.0 | 1.10 | 0.69, 1.64 |  | 78 | 67.6 | 1.15 | 0.91, 1.44 |
| Kidneyb | 189.0, 189.1 | C64-C65 |  | 13 | 15.2 | 0.85 | 0.45, 1.46 |  | 16 | 12.8 | 1.25 | 0.71, 2.03 |  | 16 | 11.2 | 1.43 | 0.82, 2.33 |  | 45 | 39.2 | 1.15 | 0.84, 1.54 |
| Brain and nervous system | 191,192 | C71-C72 |  | 21 | 17.0 | 1.23 | 0.76, 1.88 |  | 12 | 14.5 | 0.83 | 0.43, 1.45 |  | 7 | 12.4 | 0.57 | 0.23, 1.17 |  | 40 | 43.9 | 0.91 | 0.65, 1.24 |
| Thyroid | 193 | C73 |  | 1 | 1.1 | 0.93 | 0.02, 5.19 |  | 1 | 0.9 | 1.10 | 0.03, 6.15 |  | 0 | 0.9 | 0.00 | 0.00, 4.29 |  | 2 | 2.8 | 0.70 | 0.09, 2.55 |
| Hodgkin’s disease | 201 | C81 |  | 3 | 3.2 | 0.94 | 0.19, 2.75 |  | 2 | 2.7 | 0.74 | 0.09, 2.69 |  | 1 | 2.6 | 0.38 | 0.01, 2.11 |  | 6 | 8.5 | 0.71 | 0.26, 1.54 |
| Non-Hodgkin lymphomab | 200.202.0, 202.1,202.8 | C82-C85 |  | 21 | 17.4 | 1.21 | 0.75, 1.85 |  | 17 | 14.6 | 1.16 | 0.68, 1.86 |  | 12 | 12.4 | 0.97 | 0.50, 1.69 |  | 50 | 44.4 | 1.13 | 0.84, 1.48 |
| Multiple myelomab | 203.0 | C90 |  | 3 | 9.6 | 0.31 | 0.06, 0.91 |  | 11 | 8.0 | 1.37 | 0.68, 2.45 |  | 9 | 7.3 | 1.24 | 0.57, 2.35 |  | 23 | 24.9 | 0.92 | 0.59, 1.39 |
| Leukaemia | 204-208 | C91-C95 |  | 17 | 18.0 | 0.94 | 0.55, 1.51 |  | 21 | 15.1 | 1.39 | 0.86, 2.12 |  | 13 | 13.7 | 0.95 | 0.51, 1.63 |  | 51 | 46.8 | 1.09 | 0.81, 1.43 |
| Myeloid leukaemiab | 205 | C92 |  | 12 | 10.3 | 1.16 | 0.60, 2.03 |  | 13 | 8.7 | 1.49 | 0.80, 2.55 |  | 8 | 7.5 | 1.07 | 0.46, 2.11 |  | 33 | 26.5 | 1.24 | 0.86, 1.75 |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |

bBecause of changes in disease classification, the earliest follow-up for these cancers was from 1950

cBecause of changes in disease classification, the earliest follow-up for these cancers was from 1958

**Table 4A Mortality from Selected Cancers by Duration of High Exposure (analysis restricted to 3,502 men who were only ever exposed at high level)**

|  |  |  |
| --- | --- | --- |
| **Cancer** |  | **Duration of high exposurea** |
|  | **<1 year** |  | **1-14 years** |  | **≥15 years** |
|  | **Observed** | **Expected** | **SMR** | **95% CI** |  | **Observed** | **Expected** | **SMR** | **95% CI** |  | **Observed** | **Expected** | **SMR** | **95% CI** |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Oesophagus |  | 21 | 11.3 | 1.85 | 1.15-2.83 |  | 12 | 8.9 | 1.35 | 0.70-2.35 |  | 4 | 2.8 | 1.44 | 0.39-3.68 |
| Stomach |  | 29 | 18.5 | 1.57 | 1.05-2.25 |  | 25 | 16.4 | 1.52 | 0.99-2.25 |  | 4 | 5.7 | 0.71 | 0.19-1.81 |
| Large intestine |  | 23 | 16.7 | 1.38 | 0.87-2.07 |  | 14 | 13.7 | 1.02 | 0.56-1.72 |  | 6 | 4.7 | 1.29 | 0.47-2.81 |
| Rectum |  | 12 | 10.9 | 1.10 | 0.57-1.92 |  | 13 | 9.1 | 1.43 | 0.76-2.44 |  | 5 | 3.0 | 1.65 | 0.53-3.84 |
| Pancreas |  | 11 | 10.9 | 1.01 | 0.50-1.80 |  | 11 | 8.9 | 1.23 | 0.61-2.20 |  | 2 | 2.9 | 0.70 | 0.08-2.51 |
| Lung |  | 148 | 83.9 | 1.76 | 1.49-2.07 |  | 100 | 70.4 | 1.42 | 1.16-1.73 |  | 36 | 23.8 | 1.51 | 1.06-2.09 |
| Prostate |  | 12 | 22.6 | 0.53 | 0.27-0.93 |  | 18 | 17.9 | 1.01 | 0.60-1.59 |  | 5 | 7.2 | 0.70 | 0.23-1.62 |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |