Supplementary materials:

# Occupational exposure to polycyclic aromatic hydrocarbons and lung cancer risk: results from a pooled analysis of case-control studies (SYNERGY)

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Supplementary Table S1. Characteristics of studies included in the SYNERGY pooled analysis

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Study Acronym** | **Country** | **Time period of PAH exposure** | **Control source** | **Control (n=20965)** | **Controls Ever exposed PAH %** | **Control partici-pation %** | **Case (n=16901)** | **Cases Ever exposed PAH %** | **Case partici-pation %** |
| AUT | Germany | 1932-1994 | P | 3249 | 22.2 | 41 | 3180  | 33.3 | 77 |
| CAPUA | Spain | 1927-2010 | H | 512  | 23.6 | 96 | 559  | 23.3 | 91 |
| EAGLE | Italy | 1931-2005 | P | 2065 | 20.3 | 72 | 1908 | 23.3 | 87 |
| HdA | Germany | 1927-1993 | P | 1002 | 26.2 | 68 | 1004 | 33.6 | 69 |
| ICARE | France | 1941-2007 | P | 3449 | 21.9 | 77 | 2739 | 24.8 | 63 |
| INCO | Czech Republic | 1938-2002 | H | 452  | 24.6 | 80 | 304  | 31.2 | 94 |
| INCO | Hungary | 1938-1999 | H | 305  | 19.0 | 100 | 391  | 17.6 | 90 |
| INCO | Poland | 1940-2001 | H, P | 835  | 19.6 | 88 | 793  | 22.1 | 88 |
| INCO | Romania | 1938-2002 | H | 225  | 24.4 | 99 | 179  | 26.8 | 90 |
| INCO | Russia | 1937-2000 | H | 580  | 37.6 | 90 | 599  | 33.1 | 96 |
| INCO | Slovakia | 1942-2002 | H | 285  | 21.1 | 84 | 345  | 29.0 | 90 |
| INCO/LLP | United Kingdom | 1934-2004 | P | 916  | 34.1 | 84 | 441  | 38.3 | 78 |
| LUCA | France | 1927-1992 | H | 282  | 33.0 | 98 | 280  | 32.5 | 98 |
| LUCAS | Sweden | 1924-1990 | P | 2307 | 14.9 | 85 | 1014 | 18.3 | 87 |
| MONTREAL | Canada | 1937-2002 | P | 1505 | 20.5 | 69 | 1176 | 27.6 | 85 |
| MORGEN | Netherlands | 1947-1994 | P | 115  | 14.8 | N/A | 43  | 27.9 | N/A |
| PARIS | France | 1924-1992 | H | 227  | 22.9 | 95 | 169 | 23.1 | 95 |
| ROME | Italy | 1927-1995 | H | 321  | 17.4 | 63 | 326 | 15.3 | 74 |
| TURIN/VENETO | Italy | 1922-1994 | P | 1489 | 31.2 | 80 | 1086 | 34.4 | 79 |
| TORONTO | Canada | 1933-2001 | H, P | 844 | 14.1 | 71 | 365 | 16.2 | 62 |

Abbreviations: P, population-based controls; H, hospital-based controls;

Supplementary Table S2. Overall lung cancer risk associated with various metrics of occupational PAH exposure, without adjustment for List A-

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|   | Men |   |   |   |   |   | Women |   |   |   |   |   |
| PAH exposure  | Cases  | % | Controls | % | OR | 95% CI | Cases  | % | Controls | % | OR | 95% CI |
|
| Occupational exposure |   |   |   |   |   |   |   |   |   |   |   |   |
| Never | 9584 | 70.4 | 12374 | 75.2 | 1.00 | Ref | 2678 | 81.2 | 3878 | 85.9 | 1.00 | Ref |
| Ever | 4021 | 29.6 | 4077 | 24.8 | 1.11 | 1.05-1.18 | 618 | 18.8 | 636 | 14.1 | 1.21 | 1.05-1.39 |
| Duration (years) among exposed  |   |   |   |   |  |   |   |   |   |   |  |   |
| 1-9 | 1671 | 12.3 | 1759 | 10.7 | 1.06 | 0.98-1.15 | 323 | 9.8 | 359 | 8.0 | 1.19 | 0.99-1.43 |
| 10-19 | 846 | 6.2 | 832 | 5.1 | 1.17 | 1.05-1.31 | 157 | 4.8 | 157 | 3.5 | 1.21 | 0.93-1.57 |
| 20-29 | 613 | 4.5 | 602 | 3.7 | 1.13 | 0.99-1.29 | 81 | 2.5 | 69 | 1.5 | 1.28 | 0.88-1.85 |
| 30+ | 891 | 6.5 | 884 | 5.4 | 1.14 | 1.02-1.27 | 57 | 1.7 | 51 | 1.1 | 1.23 | 0.79-1.91 |
|  *Test for trend, p-value§* |   | *0.0004* |   |   |   |   |   | *0.016* |   |
|  *Test for trend, p-value (exposed only) §* |   | *0.43* |   |   |   |   |   | *0.99* |   |
| Cumulative exposure [(BaP) µg/m3-years] among exposed |   |   |   |   |  |   |   |   |   |   |  |   |
| <0.10 | 859 | 6.3 | 950 | 5.8 | 1.01 | 0.90-1.12 | 199 | 6.0 | 214 | 4.7 | 1.24 | 0.98-1.55 |
| <0.24 | 967 | 7.1 | 984 | 6.0 | 1.10 | 0.99-1.22 | 177 | 5.4 | 207 | 4.6 | 1.10 | 0.87-1.40 |
| <0.52 | 1021 | 7.5 | 1024 | 6.2 | 1.18 | 1.07-1.31 | 172 | 5.2 | 155 | 3.4 | 1.27 | 0.98-1.64 |
| 0.52-1.83 | 1174 | 8.6 | 1119 | 6.8 | 1.14 | 1.04-1.26 | 70 | 2.1 | 60 | 1.3 | 1.31 | 0.88-1.96 |
|  *Test for trend, p-value§*  |   | *<0.001* |   |   |   |   |   | *0.012* |   |
|  *Test for trend, p-value (exposed only) §*  |   | *0.15* |   |   |   |   |   | *0.81* |   |

Abbreviations: PAH, polycyclic aromatic hydrocarbons; BaP, benzo[a]pyrene; OR, odds ratio; CI confidence intervals; Ref, reference category.
OR adjusted for study, age-group, cigarette pack years, time since quitting smoking
§ p-value obtained using the ordinal variable for respective exposure index

Supplementary Figure S1. Bar plots showing the additive interaction between tobacco smoking and occupational PAH exposure on the risk of lung cancer, overall and by histological subtype, by sex



Reference = never smokers and never exposed to PAH; RERI = Relative excess risk due to interaction.