### Scoping review of the epidemiological methods used to investigate the health effects of industrially contaminated sites

Manuela De Sario,1 Roberto Pasetto,2 Simona Vecchi,1 Ariana Zeka,3,4 Gerard Hoek,5 Paola Michelozzi,1 Ivano Iavarone,2 Tony Fletcher,6 Lisa Bauleo,1 Carla Ancona1

1 Department of Epidemiology, Lazio Regional Health Service, ASL Roma 1, Rome (Italy)
2 Department of environment and health, Italian Institute of Health (ISS), Rome (Italy)
3 Albanian National Institute of Public Health, Tirana, Albania
4 Department of Public Health, Albanian Medical University, Tirana, Albania
5 Institute for Risk Assessment Sciences, Utrecht University, The Netherlands
6 Public Health England, London, UK

**Corresponding author:** Lisa Bauleo; l.bauleo@deplazio.it

### Supplementary material

**Table S1. Search Strategy**

<table>
<thead>
<tr>
<th>Database: MEDLINE (OVID)</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Date June, 30th 2018</td>
<td></td>
</tr>
<tr>
<td><strong>Exposure terms</strong></td>
<td>1. ((industr* OR site OR plant OR plants OR mill OR farm*) adj4 (petroleum* or petro-chemical* or petrochemical* OR pesticide* OR polymer* OR organochemical* OR colouring OR Pharmaceutical OR paper OR metallurg* OR potter* OR fertilizer* OR footwear OR shoe* OR lindane OR plastic OR rubber OR detergent* OR lubricant* OR lubricating* OR weapon* OR glass OR iron OR steel OR asbestos OR fluoroedenite OR amosite OR erionite OR balanergoite OR tremolite OR crocidolite OR chrysotile OR serpentine OR antigorite OR anthophyllite OR actinolite OR ferroactinolite OR amphibole*).ab,ti</td>
</tr>
</tbody>
</table>
Environmental health challenges from industrial contamination

COST Action IS1408
Industrially Contaminated Sites and Health Network (ICSHNet)

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>2.</td>
<td>&quot;mineral fiber*&quot;.ab,ti</td>
</tr>
<tr>
<td>3.</td>
<td>industrial adj2 gas.ab,ti</td>
</tr>
<tr>
<td>4.</td>
<td>agricultural adj2 chemicals.ab,ti</td>
</tr>
<tr>
<td>5.</td>
<td>&quot;waste oil&quot;.ab,ti</td>
</tr>
<tr>
<td>6.</td>
<td>((oil* OR petrol) adj3 (pollution OR refine* OR refining)).ab,ti</td>
</tr>
<tr>
<td>7.</td>
<td>&quot;fluoro edenite&quot;.ab,ti</td>
</tr>
<tr>
<td>8.</td>
<td>&quot;blue asbestos&quot;.ab,ti</td>
</tr>
<tr>
<td>9.</td>
<td>2 OR 3 OR 4 OR 5 OR 6 OR 7 OR 8</td>
</tr>
<tr>
<td>10.</td>
<td>(industr* OR site OR plant OR plants OR mill OR farm*).ab,ti</td>
</tr>
<tr>
<td>11.</td>
<td>10 AND 9</td>
</tr>
<tr>
<td>12.</td>
<td>((power) adj2 (plant* OR station)).ab,ti</td>
</tr>
<tr>
<td>13.</td>
<td>electricity adj2 production.ab,ti</td>
</tr>
<tr>
<td>14.</td>
<td>industrial.ti,ab</td>
</tr>
<tr>
<td>15.</td>
<td>1 OR 11 OR 12 OR 13 or 14</td>
</tr>
<tr>
<td>16.</td>
<td>(((mining OR quarries OR quarry OR waste OR incinerator* OR Landfill* OR port OR harbor OR harbour OR ship OR dock OR Superfund).ab,ti</td>
</tr>
<tr>
<td>17.</td>
<td>15 not “data mining”.af</td>
</tr>
<tr>
<td>18.</td>
<td>16 OR 14</td>
</tr>
<tr>
<td></td>
<td>165,710</td>
</tr>
</tbody>
</table>

**Outcome:**

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>19.</td>
<td>(Mortality OR Morbidity OR neoplasm* OR tumor* OR cancer* OR pregnan* OR respirator* OR cardiovas* OR renal OR digestive OR congenital OR reproductive OR birth* OR death* OR neurologic*).ab,ti</td>
</tr>
<tr>
<td>20.</td>
<td>MORTALITY.sh.</td>
</tr>
<tr>
<td>21.</td>
<td>18 or 19</td>
</tr>
<tr>
<td></td>
<td>5,313,755</td>
</tr>
<tr>
<td>Population:</td>
<td>22. Biomonitoring.ab,ti</td>
</tr>
<tr>
<td>-------------</td>
<td>------------------------</td>
</tr>
<tr>
<td>23. (residence* or resident* OR residing OR residential* OR city OR cities OR community OR communities OR municipality OR neighbourhood* OR neighborhood* OR neighbouring OR neighboring OR urban OR exposed).ab,ti</td>
<td></td>
</tr>
<tr>
<td>24. 21 or 22</td>
<td>1,242,508</td>
</tr>
<tr>
<td>25. 17 and 20 and 23</td>
<td>6,711</td>
</tr>
<tr>
<td>25. 24 and &quot;Humans&quot; [Subjects]</td>
<td>5,485</td>
</tr>
</tbody>
</table>
Table S2. Description of the studies identified from the MedLine search included in the review.
See Excel file on-line (www.epiprev.it/xxxXXXxxxXXX)
Table S3. Description of the studies on contaminated sites identified from MedLine search, by type of ICS, study design, outcome, and continent.

<table>
<thead>
<tr>
<th>Type of industrial site</th>
<th>Outcomes</th>
<th>Continent</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Asbestos industries and mining</strong> (28 studies)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cohort (8 studies)</td>
<td>Cancer (mesothelioma, lung cancer) vitamin levels</td>
<td>Australia and New Zealand (6 studies) Europe (2 studies)</td>
</tr>
<tr>
<td>no accident</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1 study on children</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Case-control (2 studies)</td>
<td>Cancer (mesothelioma, lung cancer)</td>
<td>Australia and New Zealand (1 study) Europe (1 study)</td>
</tr>
<tr>
<td>no accident</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1 study on children</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Descriptive studies (11 studies)</td>
<td>Cancer (liver and lung), respiratory diseases, reproductive health</td>
<td>Africa (1 study) Asia (5 studies) Australia and New Zealand (1 study) Europe (2 studies) North America (2 studies)</td>
</tr>
<tr>
<td>no accident</td>
<td></td>
<td></td>
</tr>
<tr>
<td>no study on children</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cross-sectional (3 studies)</td>
<td>COPD, pleural anomalies, respiratory cancer</td>
<td>Europe (2 studies) North America (1 study)</td>
</tr>
<tr>
<td>no accident</td>
<td></td>
<td></td>
</tr>
<tr>
<td>no study on children</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Case-report (2 studies)</td>
<td>Cancer (mesothelioma, lung cancer)</td>
<td>Asia (1 study) Europe (1 study)</td>
</tr>
<tr>
<td>no accident</td>
<td></td>
<td></td>
</tr>
<tr>
<td>no study on children</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Narrative review (2 studies)</td>
<td>Cancer mortality, other outcomes</td>
<td>Asia (1 study) Europe (1 study)</td>
</tr>
</tbody>
</table>
Environmental health challenges from industrial contamination

COST Action IS1408
Industrially Contaminated Sites and Health Network (ICSHNet)

### Chemical, petrochemical, cement, and power plants (167 studies)

#### Type of industrial site

<table>
<thead>
<tr>
<th>Type of industrial site</th>
<th>Outcomes</th>
<th>Continent</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Cohort</strong> (12 studies)</td>
<td>Cancer, neurological/cognitive impairment, respiratory outcomes, pregnancy outcomes</td>
<td>Asia (6 studies) Australia and New Zealand (1 study) Europe (2 studies) North America (3 studies)</td>
</tr>
<tr>
<td>2 studies on accident (Gulen, Japan; Minamata, Japan)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1 study on children</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2 birth cohorts</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1 with exposure assessed from biomonitoring</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Case-control</strong> (17 studies)</td>
<td>Cancer (brain, breast, leukaemia, lung, bladder, skin), respiratory diseases, pregnancy outcomes</td>
<td>Asia (8 studies) Central and South America (1 study) Europe (6 studies) North America (2 studies)</td>
</tr>
<tr>
<td>no accident</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6 studies on children</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Temporal change</strong> (8 studies)</td>
<td>Cancer (brain, gastrointestinal), respiratory diseases, fertility, cardiovascular diseases</td>
<td>Asia (2 studies) Central and South America (2 studies) Europe (3 studies) North America (1 study)</td>
</tr>
<tr>
<td>no accident</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3 panel studies (2 on children)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Descriptive studies</strong> (60 studies)</td>
<td>Cancer (ematopoietic, lymphomas, lung, bladder, liver), neurological diseases, respiratory diseases, pregnancy outcomes</td>
<td>Africa (1 study) Asia (22 studies) Australia and New Zealand (1 study) Central and South America (1 study) Europe (21 studies) North America (14 studies)</td>
</tr>
<tr>
<td>1 accident (Seveso, Italy)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>24 studies on children</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Ecological</strong> (8 studies)</td>
<td>Cancer, respiratory and allergic diseases</td>
<td>Asia (5 studies) Central and South America (1 study) North America (2 studies)</td>
</tr>
<tr>
<td>No accident</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2 studies on children</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

---

Epidemiologia&Prevenzione 2018; n. 5-6 Suppl 1
### Environmental health challenges from industrial contamination

**COST Action IS1408**  
**Industrially Contaminated Sites and Health Network (ICSHNet)**

<table>
<thead>
<tr>
<th>Type of industrial site</th>
<th>Outcomes</th>
<th>Continent</th>
</tr>
</thead>
</table>
| **Cross-sectional** (30 studies)  
1 accident (Minamata, Japan)  
15 studies on children  
2 with exposure assessed from biomonitoring | Respiratory symptoms, renal function, pregnancy outcomes, risk perception, genetic/epigenetic changes | Asia (15 studies) Australia and New Zealand (2 studies) Central and South America (2 studies) Europe (9 studies) North America (2 studies) |
| **Case-report** (1 study)  
no accident  
no study on children | Cancer (brain) | North America (1 study) |
| **Narrative review** (25 studies)  
7 accident studies (Bhopal, India; Minamata Bay, Japan; Nitro, West Virginia, US; Seveso, Italy)  
9 studies on children | Cancer, neurological diseases, respiratory diseases, gastrointestinal diseases, pregnancy outcomes | Asia (14 studies) Europe (5 studies) North America (6 studies) |
| **Biomonitoring** (6 studies)  
1 accident (Texas City, Texas, US)  
1 study on children | - | Asia (3 studies) Central and South America (1 study) Europe (1 study) North America (1 study) |

#### Metallurgic plant (73 studies)

<table>
<thead>
<tr>
<th>Type of industrial site</th>
<th>Outcomes</th>
<th>Continent</th>
</tr>
</thead>
</table>
| **Trial** (2 studies)  
no accident  
no study on children | Cardiovascular diseases | North America (2 studies) |
<table>
<thead>
<tr>
<th>Type of industrial site</th>
<th>Outcomes</th>
<th>Continent</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Cohort and birth cohort</strong> (3 studies) no accident 1 study on children, 2 birth cohorts</td>
<td>Neurological diseases, pregnancy outcomes</td>
<td>Australia and New Zealand (3 studies)</td>
</tr>
<tr>
<td><strong>Case-control</strong> (6 studies) no accident no study on children</td>
<td>Cancer (lung, bladder, breast)</td>
<td>Europe (4 studies) North America (2 studies)</td>
</tr>
<tr>
<td><strong>Temporal changes study</strong> (3 studies) no accident no study on children</td>
<td>Cancer (brain, gastrointestinal), respiratory diseases</td>
<td>Australia and New Zealand (1 study) Central and South America (2 studies)</td>
</tr>
<tr>
<td><strong>Descriptive studies</strong> (23 studies) no accident 8 studies on children</td>
<td>Cancer (bladder, lung, mesothelioma), neurological diseases, respiratory diseases, pregnancy outcomes, genetic/epigenetic changes</td>
<td>Africa (1 study) Asia (3 studies) Central and South America (3 studies) Europe (10 studies) North America (6 studies)</td>
</tr>
<tr>
<td><strong>Ecological studies</strong> (6 studies) no accident 2 studies on children</td>
<td>Cancer (lung, gastrointestinal, respiratory and allergic diseases</td>
<td>Asia (3 studies) Europe (1 study) North America (2 studies)</td>
</tr>
<tr>
<td><strong>Cross-sectional studies</strong> (12 studies) no accident 5 studies on children 1 study with exposure assessment from biomonitoring</td>
<td>Respiratory symptoms, cognitive impairment, genetic/epigenetic changes, risk perception</td>
<td>Africa (2 studies) Asia (4 studies) Central and South America (2 studies) Europe (4 studies)</td>
</tr>
<tr>
<td><strong>Narrative review</strong> (12 studies) no accident 4 studies on children</td>
<td>Cancer, inflammatory markers, pregnancy outcomes</td>
<td>Asia (6 studies) Australia and New Zealand (1 study) Europe (2 studies) North America (3 studies)</td>
</tr>
<tr>
<td><strong>Biomonitoring</strong> (6 studies) no accident 5 studies on children</td>
<td>-</td>
<td>Africa (1 study) Asia (1 study) Australia and New Zealand (2 studies) Central and South America (1 study) Europe (1 study)</td>
</tr>
</tbody>
</table>
### Nuclear power plant (97 studies)

![Bar chart showing ICS studies on nuclear power plants]

<table>
<thead>
<tr>
<th>Type of study</th>
<th>Outcomes</th>
<th>Continent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cohort (16 studies)</td>
<td>Cancer (leukaemia, thyroid), thyroid diseases, skin diseases</td>
<td>Asia (9 studies) Europe (2 studies) North America (5 studies)</td>
</tr>
<tr>
<td>Case-control (5 studies)</td>
<td>Cancer (leukaemia, lymphomas, thyroid)</td>
<td>Asia (3 studies) Europe (2 studies)</td>
</tr>
<tr>
<td>Temporal changes study (2 studies)</td>
<td>Cancer (leukaemia, thyroid)</td>
<td>Asia (1 study) North America (1 study)</td>
</tr>
<tr>
<td>Descriptive studies (24 studies)</td>
<td>Cancer, cardiovascular diseases, multiple outcomes, neurological diseases, respiratory diseases, pregnancy outcomes, genetic/epigenetic changes</td>
<td>Asia (7 studies) Europe (9 studies) North America (8 studies)</td>
</tr>
<tr>
<td>Ecological (5 studies)</td>
<td>Cancer, cardiovascular diseases, pregnancy outcomes</td>
<td>Asia (3 studies) North America (2 studies)</td>
</tr>
</tbody>
</table>
Environmental health challenges from industrial contamination

**COST Action IS1408
Industrially Contaminated Sites and Health Network (ICSHNet)**

<table>
<thead>
<tr>
<th>Type of industrial site</th>
<th>Outcomes</th>
<th>Continent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cross-sectional (11 studies)</td>
<td>Cancer (thyroid), neurological diseases, cardiovascular diseases, respiratory diseases, genetic/epigenetic changes, risk perception</td>
<td>Asia (9 studies) Europe (1 study) North America (1 study)</td>
</tr>
<tr>
<td>Case-report (8 studies)</td>
<td>Cancer (breast, lung, thyroid), reproductive health</td>
<td>Asia (7 study) North America (1 study)</td>
</tr>
<tr>
<td>Narrative review (26 studies)</td>
<td>Cancer (breast, leukaemia), thyroid disease, immune alterations, pregnancy outcomes</td>
<td>Asia (23 studies) Europe (3 studies)</td>
</tr>
<tr>
<td>Harbour (17 studies)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Type of industrial site: Cohort (2 studies) Case-control (1 study) Temporal change studies (3 studies)

Outcomes: Respiratory function Cancer Cancer (brain, gastrointestinal), respiratory diseases, cardiovascular diseases

Continent: Europe (1 study) North America (1 study) Europe (1 study) Central and South America (2 studies) Europe (1 study)
Environmental health challenges from industrial contamination

**COST Action IS1408**
*Industrially Contaminated Sites and Health Network (ICSHNet)*

### Descriptive studies (5 studies)
- **Outcomes**: Cancer, several outcomes
- **Continent**: Central and South America (1 study) Europe (4 studies)
- **Type of study**: no accident, no studies on children

### Ecological (1 study)
- **Outcomes**: Respiratory and allergic diseases
- **Continent**: Asia (1 study)
- **Type of study**: no accident, no study on children

### Cross-sectional (4 studies)
- **Outcomes**: Cognitive impairment, respiratory and allergic diseases
- **Continent**: Australia and New Zealand (1 study) Europe (2 studies) North America (1 study)
- **Type of study**: no study on accident, 2 studies on children

### Biomonitoring studies (1 study)
- **Outcomes**: -
- **Continent**: Europe (1 study)
- **Type of study**: no accident, no study on children

### Mining industry (99 studies)

![ICS studies on mining](image)

#### Type of industrial site

<table>
<thead>
<tr>
<th>Study Type</th>
<th>Outcomes</th>
<th>Continent</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Systematic review</strong></td>
<td>Multiple outcomes</td>
<td>North America (1 study)</td>
</tr>
<tr>
<td>no accident</td>
<td></td>
<td></td>
</tr>
<tr>
<td>no children</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Cohort</strong> (4 studies)</td>
<td>Cancer, neurological development</td>
<td>Central and South America (2 studies) North America (2 studies)</td>
</tr>
<tr>
<td>no accident</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3 birth cohorts</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Case-control</strong> (5 studies)</td>
<td>Cancer (breast, lung, stomach)</td>
<td>Asia (2 studies) Central and South America (1 study) North America (2 studies)</td>
</tr>
<tr>
<td>no accident</td>
<td></td>
<td></td>
</tr>
<tr>
<td>no study on children</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Environmental health challenges from industrial contamination

**COST Action IS1408**  
**Industrially Contaminated Sites and Health Network (ICSHNet)**

<table>
<thead>
<tr>
<th>Type of industrial site</th>
<th>Outcomes</th>
<th>Continent</th>
</tr>
</thead>
</table>
| **Temporal change study** (2 studies)  
no accident  
2 panel studies on children | Cancer, respiratory diseases                                               | Europe (2 studies)                                                        |
| **Descriptive studies** (29 studies)  
no accident  
4 studies on children | Cancer (lung, prostate), cardiovascular diseases, multiple outcomes, neurological diseases, psychiatric diseases, respiratory diseases, renal function, reproductive health, genetic/epigenetic changes | Africa (1 study) Asia (7 studies) Australia and New Zealand (3 studies) Central and South America (2 studies) Europe (5 studies) North America (11 studies) |
| **Ecological** (3 studies)  
no accident  
1 study on children | Cancer, respiratory and cardiovascular disease                           | Asia (2 studies) Central and South America (1 study)                      |
| **Cross-sectional** (23 studies)  
no accident  
9 studies on children | Respiratory symptoms, cardiovascular disease, renal disease, pregnancy outcomes, neurological development, genetic/epigenetic changes, perceived risk, hearing loss | Africa (4 studies) Asia (2 studies) Australia and New Zealand (1 study) Central and South America (9 studies) Europe (1 study) North America (6 studies) |
| **Case-report** (4 studies)  
no accident  
1 study on children | Cancer (brain), cardiovascular diseases, neurological diseases, renal disease, eye vision development | Asia (1 study) Australia and New Zealand (1 study) Europe (1 study) North America (1 study) |
| **Narrative review** (14 studies)  
no accident  
3 studies on children | Cancer, multiple outcomes, neurological diseases, respiratory diseases, other outcomes | Africa (2 studies) Asia (6 studies) Europe (4 studies) North America (2 studies) |
| **Biomonitoring** (14 study)  
no accident  
7 studies on children | -                                                                        | Asia (1 study) Asia (4 studies) Australia and New Zealand (3 studies) Central and South America (4 studies) Europe (2 studies) |
### Waste (incinerator, landfill, e-waste, hazardous waste, waste management) (178 studies)

<table>
<thead>
<tr>
<th>Type of industrial site</th>
<th>Outcomes</th>
<th>Continent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Systematic review (1 study)</td>
<td>multiple outcomes</td>
<td>Europe (1 study)</td>
</tr>
<tr>
<td>no accident</td>
<td>no study on children</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Type of industrial site</th>
<th>Outcomes</th>
<th>Continent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cohort (20 studies)</td>
<td>Cancer, respiratory diseases, neurological development, pregnancy outcomes</td>
<td>Asia (4 studies) Central and South America (2 studies) Europe (7 studies) North America (7 studies)</td>
</tr>
<tr>
<td>no accident</td>
<td>3 studies on children, 1 birth cohort</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Type of industrial site</th>
<th>Outcomes</th>
<th>Continent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Case-control (23 studies)</td>
<td>Cancer (sarcomas, breast, lung, Wilms’s cancer), renal function, pregnancy outcomes, genetic/epigenetic changes</td>
<td>Asia (1 study) Europe (10 studies) North America (12 studies)</td>
</tr>
<tr>
<td>no accident</td>
<td>14 studies on children</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Type of industrial site</th>
<th>Outcomes</th>
<th>Continent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Temporal change study (4 studies)</td>
<td>Cognitive development, respiratory and cardiovascular disease, psychological symptoms</td>
<td>Central and South America (1 study) Europe (2 studies) North America (1 study)</td>
</tr>
<tr>
<td>no accident</td>
<td>1 study on children</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Type of industrial site</th>
<th>Outcomes</th>
<th>Continent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Descriptive studies (64 studies)</td>
<td>Cancer (breast, bladder, gastrointestinal, haematological, liver), respiratory diseases, pregnancy outcome, genetic/epigenetic changes</td>
<td>Asia (5 studies) Australia and New Zealand (1 study) Central and South America (3 studies) Europe (41 studies) North America (14 studies)</td>
</tr>
<tr>
<td>no accident</td>
<td>1 study on children</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Type of industrial site</th>
<th>Outcomes</th>
<th>Continent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ecological (2 studies)</td>
<td>Pregnancy outcome</td>
<td>Asia (2 studies)</td>
</tr>
<tr>
<td>no accident</td>
<td>1 study with exposure assessment from biomonitoring 2 studies on children</td>
<td></td>
</tr>
</tbody>
</table>
### Environmental health challenges from industrial contamination

**COST Action IS1408**  
*Industrially Contaminated Sites and Health Network (ICSHNet)*

<table>
<thead>
<tr>
<th>Type of industrial site</th>
<th>Outcomes</th>
<th>Continent</th>
</tr>
</thead>
</table>
| **Cross-sectional** (26 studies)  
1 accident (St. Louis, Missouri, US)  
1 study with exposure assessment from biomonitoring  
11 studies on children | Cancer, respiratory diseases, pregnancy outcome, genetic/epigenetic changes, inflammatory markers | Africa (4 studies) Asia (6 studies) Australia and New Zealand (1 study) Central and South America (3 studies) Europe (2 studies) North America (10 studies) |
| **Case report** (1 study)  
no accident | Breast cancer | Europe (1 study) |
| **Narrative review** (18 studies)  
no accident  
5 studies on children | Cancer, respiratory diseases, pregnancy outcomes | Asia (1 study) Europe (10 studies) North America (7 studies) |
| **Biomonitoring** (19 studies)  
no accident  
3 studies on children | - | Africa (1 study) Asia (3 studies) Australia and New Zealand (1 study) Central and South America (4 studies) Europe (6 studies) North America (4 studies) |
Table S4. Description of the studies identified from the Italian ICSs included in the review.
See Excel file on-line (www.epiprev.it/xxxXXXxxxxXXX)
Table S5. List of the original papers included in the review

Part A – ICS studies included in the review (No. 655)


Environmental health challenges from industrial contamination

COST Action IS1408
Industrially Contaminated Sites and Health Network (ICSHNet)


55. Berry M. Mesothelioma incidence and community asbestos exposure.
Environmental health challenges from industrial contamination

COST Action IS1408
Industrially Contaminated Sites and Health Network (ICSHNet)


100. Bugaev VN, Treskunova TV, Bomko EI. [Level and pattern of morbidity of children residing in the Ukrainian S.S.R. exposed to radioactive pollution as the result
130. Chul Kim S, Kyoung Kwon S, Pyo Hong Y. Trends in the incidence of


143. Cresswell PA, Shaw GM, Sanbonmatsu L, Selvin S, Buffler PA. Maternal residential


232. Giron SL, Mateus JC, Mendez F. [Impact of an open waste disposal site on the occurrence of respiratory symptoms and on health care costs of children]. Biomedica
Environmental health challenges from industrial contamination

COST Action IS1408
Industrially Contaminated Sites and Health Network (ICSHNet)

248. Gouveia N, Prado RRd. [Spatial analysis of the health risks associated with solid


294. Howe GR. Leukemia following the Chernobyl accident. Health physics.
Environmental health challenges from industrial contamination

COST Action IS1408
Industrially Contaminated Sites and Health Network (ICSHNet)


310. Kalinkin DE, Karpov AB, Takhauvo AB, Samoilova IA, Shiriaeva IV, Oreshin AA. [Mortality from cancer of the population living close to a large nuclear power
Environmental health challenges from industrial contamination

COST Action IS1408
Industrially Contaminated Sites and Health Network (ICSHNet)


325. Ko YC. [Air pollution and its health effects on residents in Taiwanese
Environmental health challenges from industrial contamination

COST Action IS1408
Industrially Contaminated Sites and Health Network (ICSHNet)


[339.] Kovalevskiy EV, Schonfeld SJ, Feletto E, Moissonnier M, Kashanskiy SV,
347. Lamm SH, Li J, Robbins SA, Dissen E, Chen R, Feinleib M. Are residents of mountain-top mining counties more likely to have infants with birth defects? The West Virginia experience. Birth defects research Part A, Clinical and molecular teratology. 2015;103(2):76-84.


382. Lysyi AI, Samko IS, Lysa LO. [The characteristics of individual environmental factors and the health of the population of the Krivoi Rog iron ore basin]. Lik Sprava 1994(9-12):54-6.


396. Mataloni F, Ancona C, Badaloni C, Bucci S, Busco S, Cupellaro E, et al. [Cancer incidence and mortality in the cohort of residents close to the Italian nuclear power
Environmental health challenges from industrial contamination

COST Action IS1408
Industrially Contaminated Sites and Health Network (ICSHNet)

411. Meyer J, Geuenich HH, Robra BP, Windorfer A. [Determinants of lead
Environmental health challenges from industrial contamination

COST Action IS1408
Industrially Contaminated Sites and Health Network (ICSHNet)


476. Pisarchik AV, Iarmolinskii DG, Demidchik IE, Ermak GZ, Kartel NA, Figge J. [ret/PtC1 and ret/PTC3r1 rearrangement in thyroid cancer cells, arising in residents of Belorus in the period after the accident at the Chernobyl nuclear power plant]. Genetika 2000;36(7):959-64.
484. Posgay M, Varro MJ, Szentmihalyi R, Lang Z. [Environmental epidemiological study on respiratory diseases in two Hungarian towns]. Legzoszervi kornyezet-
498. Reid A, de Klerk N, Ambrosini G, Olsen N, Pang SC, Musk AW. The additional


Environmental health challenges from industrial contamination

COST Action IS1408
Industrially Contaminated Sites and Health Network (ICSHNet)

2012;112:147-54.
526. Salerno C, Marciani P, Vanhaeckt K, Palini LA, Panella M. Incidence of oncological pathologies 2002-2010 in the southwestern Piedmont area, province of
Environmental health challenges from industrial contamination

COST Action IS1408
Industrially Contaminated Sites and Health Network (ICSHNet)


528. Salerno C, Palin LA. [State of health of the population residing in the town of Barengo and in surrounding communities, site of a field used as landfill for MSW: analysis of the general incidence and causes from 2003 to 2009]. Ann Ig. 2011;23(5):399-418.


544. Shafaizieva GD. [The characteristics of morbidity in women of fertile age residing the area of Tadjikistan aluminum factory]. Problemy sotsial'noi gigieny, zdravoookhraneniia i istorii meditciny. 2009(2):50-1.


Environmental health challenges from industrial contamination

COST Action IS1408
Industrially Contaminated Sites and Health Network (ICSHNet)

Environmental health challenges from industrial contamination

COST Action IS1408
Industrially Contaminated Sites and Health Network (ICSHNet)

586. Tsai S-S, Yu H-S, Liu C-C, Yang C-Y. Increased incidence of preterm delivery in mothers residing in an industrialized area in Taiwan. Journal of toxicology and
Environmental health challenges from industrial contamination

COST Action IS1408
Industrially Contaminated Sites and Health Network (ICSHNet)

Epidemiologia&Prevenzione 2018; n. 5-6 Suppl 1


600. Wakeford R. The risk of leukaemia in young children from exposure to tritium and carbon-14 in the discharges of German nuclear power stations and in the fallout.


645. Zeng X, Xu X, Zheng X, Reponen T, Chen A, Huo X. Heavy metals in PM2.5 and

Part B – Additional ICS studies included in the Italian case-study (No. 107)


Environmental health challenges from industrial contamination

COST Action IS1408
Industrially Contaminated Sites and Health Network (ICSHNet)


