Short abstract:

The linked data based web application allows as an assistance system the exploration of cause-effect relationships between cancer types and environmental substances within a predefined region by dynamic geovisualizations.

Abstract:

The current state is that cancer related cause-effect information is available as open data on the web but in most instances non-aggregated and partially cumbersome to access. The presented application eases with the use of linked data and further semantic technologies the accessibility of cancer related information.
The purpose of the system is, besides the possibility to get information about cancer related cause-effect relationships, to allow an effective exploration in a parallel way of epidemiological and environmental datasets in spatial context by adequate geovisualizations. In order to represent cancer cause-effect information for the example region Westfalen-Lippe, different environmental datasets (e.g. air quality data, soil data, industrial accident data, contaminated sites etc.) as well as epidemiological datasets (e.g. statistical comparison values of cancer incidents) are generated as linked datasets. Additionally, a cancer cause-effect domain ontology is derived from the monographies of *International Agency of Research on Cancer* (IARC)[1]. The focus is on the chainage: cancer type (e.g. lung cancer) - carcinogen (e.g. diesel exhaust particulates) - emission process (e.g. driving) - transport way (e.g. aerosol) - emission source (e.g. car) - exponent (e.g. males/females). The workflow, from raw data over semantic modelling to the web application, is realized completely by different open source software (Protege, Apache Jena, Leaflet). Results of the project (e. g. domain ontology) are available besides the application code on Github (https://github.com/lodum/CancerExplorer).

1 http://www.iarc.fr/