

## Fraser Surrey Docks Human Health Risk Assessment Summary

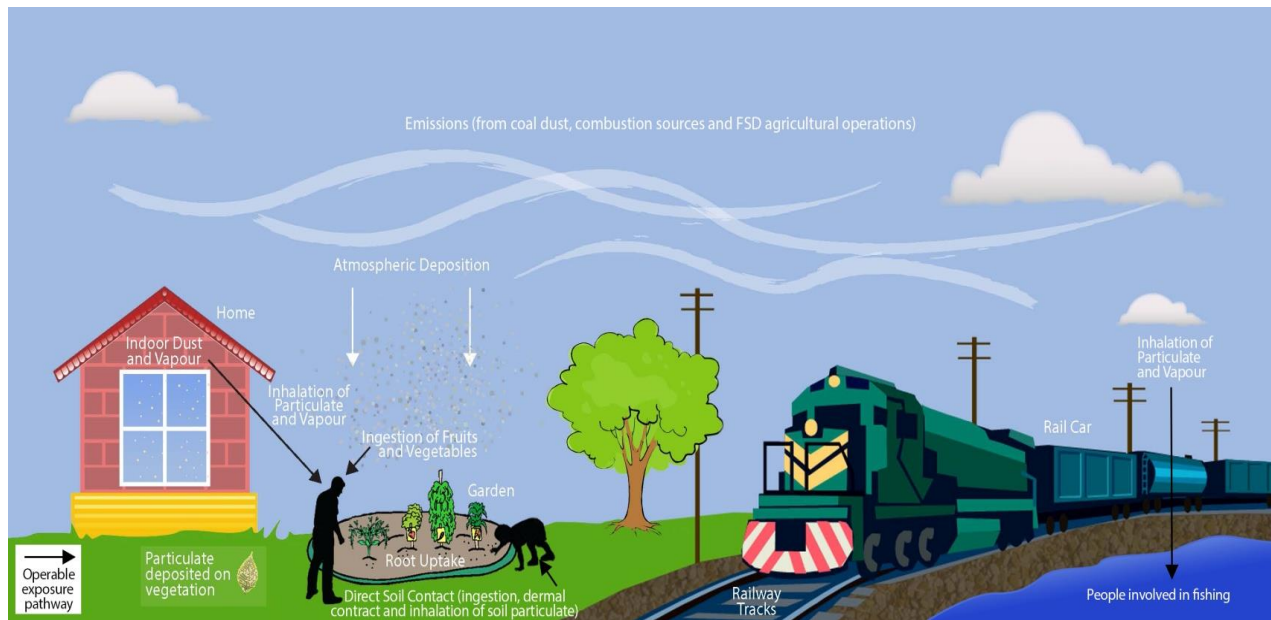
SNC-Lavalin Inc. conducted a human health risk assessment for the proposed Fraser Surrey Docks (FSD) Direct Transfer Coal Facility (the Project). The risk assessment evaluated if the handling of coal at FSD and the transport of coal via trains and marine vessels would be safe for people in the area. The assessment looked at a comprehensive list of substances with the potential to be present in emissions that may arise from the Project. Consideration was given to people of all ages, including children, along the rail and marine routes and in the area surrounding the facility including the City of White Rock, City of Surrey, Corporation of Delta, City of New Westminster and the City of Richmond. The assessment found that exposures to emissions from the Project, including from rail trains and marine vessels, were safe for people in all these areas.

Human health risk assessment is a tool used to determine if people will be safe if they are exposed to substances that are in the environment, food, or consumer products. Regulatory health agencies such as Health Canada and the World Health Organization put considerable effort into establishing methods to conduct risk assessments and determining safe levels of intake of various substances. Governments, stakeholders and members of the public rely on risk assessments to help determine what is safe and if mitigation is needed. Health Canada is the federal department responsible for helping Canadians maintain and improve their health and is the regulatory body governing human health risk assessment in Canada. The risk assessment for the proposed project was conducted using the methods developed by and recommended by Health Canada. The findings of the assessment were reviewed by a third party (Golder Associates Ltd.) whom supported the findings, stating that both the methods used in the assessment and its conclusions were made in conformance with recognized health assessment frameworks.

The risk assessment was based, in part, on an air quality assessment (AQA) for the Project conducted by Levelton Consultants Ltd. with findings reviewed by Golder Associates Ltd. The AQA predicted emissions from the Project and considered locations where sensitive individuals could be present, including hospitals, schools, senior care residences and daycare centres within the area. A comprehensive list of emission sources was evaluated in the AQA including the proposed coal operations at FSD (including locomotive exhaust emissions, tugboat exhaust emissions, material transfer points, coal unloading and loading, fugitive dust), in-transit emission sources (including combustion and fugitive dust emissions from rail transport in the Lower Fraser Valley and marine vessels on the Fraser River) and the existing agricultural operations at FSD (including bag houses/cyclones, material transfer points, and ship loading). In addition to the results of the AQA, an independent laboratory analyzed coal samples from FSD's customers and producers; the results of the analysis were used to determine which substances have the potential to be present in coal dust. Although the results of the coal analysis were used in the risk assessment, it was acknowledged that substances in the coal are not generally very bioavailable (absorbed into a living system) under typical environmental conditions. Furthermore, the dust suppressants that will be used to control dust from the coal were also evaluated in the risk assessment. Overall, the risk assessment looked at the safety of over 65 substances including metals, metalloids,

polycyclic aromatic hydrocarbons, various volatile substances, particulate matter and other criteria pollutants, and the dust suppressants. Golder Associates Ltd. agreed with the list of substances evaluated in the risk assessment and indicated that the list was comprehensive.

The risk assessment evaluated the different ways people within the region, including, but not limited to those living in the Project area and those living along the rail and marine routes, could be exposed to Project emissions. Residents, park users, commercial workers, industrial workers, people consuming produce grown in the area and people fishing on the Fraser River were evaluated. Both acute (short-term) and chronic (long-term) inhalation of gaseous substances in Project emissions were evaluated. Although the inhalation of Project emissions was considered to be the primary way people could be exposed to the emissions, a robust analysis was conducted to assess different ways of potential exposure in the environment, including: the inhalation of emissions; the deposition of substances in the emissions onto soil and subsequent inhalation of dust from soil; ingestion of soil; skin contact with soil; and consumption of unwashed and unpeeled fruits and vegetables grown in areas with the highest potential emissions. The assessment used a series of conservative assumptions when assessing safety including, for example, that people would be exposed to the highest predicted emissions for 24 hours a day, 7 days a week and that 100 percent of the produce consumed by people would be grown in areas with the highest potential emissions. Based on the use of these conservative assumptions, exposures to people in the region were not under-predicted.



Using Health Canada methods and guidance, it was found that potential exposures from the Project are safe for all people working and living in the area of FSD, as well as along the rail and marine routes. Golder Associated Ltd. concurred with the assumptions, scenarios and conclusions of the human health risk assessment and indicated that the assessment erred on the side of caution.