

3.17 HUMAN HEALTH AND SAFETY

This section provides an overview of human health and safety in the study area based on data from federal and state sources, as well as data from other sections of this EIS that are related to human health and safety (noise, air quality, water resources, etc.).

3.17.1 State Data on Public Health and Safety

SCDHEC compiles data and information on the health and safety of state residents. The Project site in Charleston County is within the Low Country Region reporting area. Data on selected reportable diseases is reported by SCDHEC by region and county (<http://www.scdhec.gov/Health/SCPublicHealthStatisticsMaps/>).

Cause of death is an indicator of key issues associated with public health and safety. As reported by SCDHEC for 2012, the ten leading causes of death in Charleston County and the Low Country Region (which includes 11 counties in the southern portion of South Carolina) are shown in the bar graph below (Figure 3.17-1).

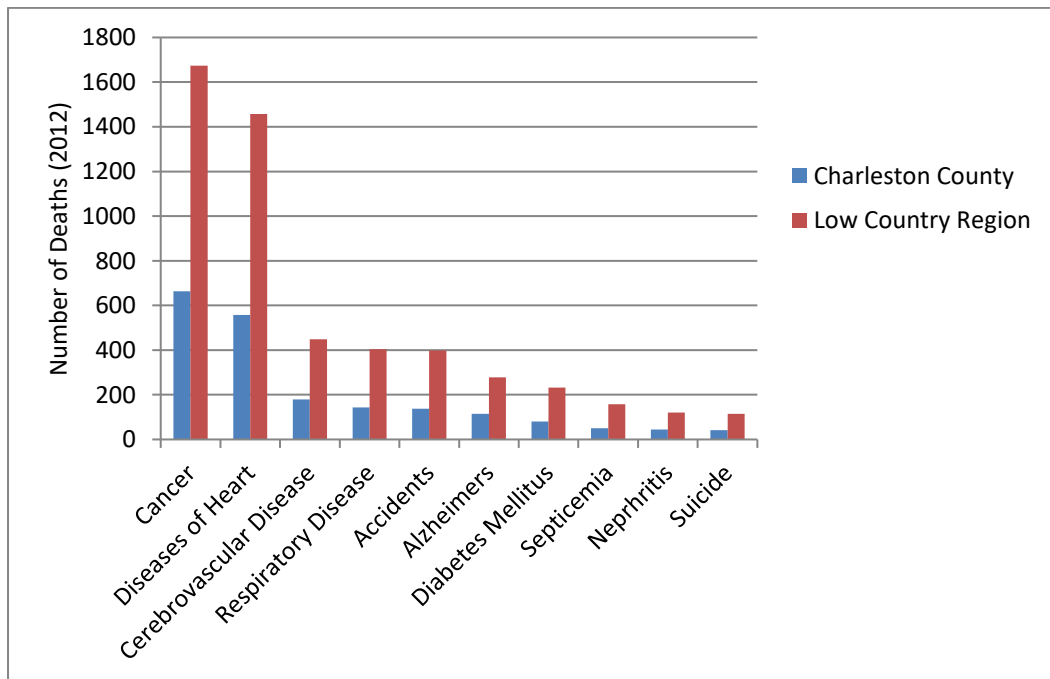


Figure 3.17-1. Leading causes of death in Charleston County and the Low County Region (2012)

3.17.2 Water Quality and Human Health

Water quality is important to human health, since contaminated water supplies can become unusable for human consumption due to risk of illness. Water quality standards are set by the State of South Carolina to regulate how clean a water body should be. Water quality standards include a water

body's designated uses, criteria to protect those uses, and anti-degradation policies. Existing water quality conditions in the study area are discussed in detail in Section 3.3.

Municipal water supplies for the City of North Charleston are served by the Charleston Water System. This utility gets their water primarily from Bushy Park Reservoir and secondarily from the Edisto River. The Charleston Water System has no operating groundwater wells in the study area (personal communication, Jane Byrne, Charleston Water System, September 30, 2014).

3.17.3 Noise and Human Health

Noise is defined as unwanted sound. It is emitted from many natural and man-made sources. According to the EPA, human health concerns related to noise include "stress-related illnesses, high blood pressure, speech interference, hearing loss, sleep disruption, and lost productivity" (EPA 2014d). Potential noise from the proposed facility has been identified as a major concern of local residents. The existing noise environment in the study area is discussed in detail in Section 3.12.

3.17.4 Air Quality and Human Health

The quality of ambient air plays an important role in the health of the public. Exposure to pollutants is associated with numerous effects on human health, including increased respiratory symptoms, hospitalization for heart or lung disease, and even premature death. Health effects associated with criteria air pollutants and existing air quality in the study area are discussed in detail in Section 3.13.

According to a 2013 assessment by the World Health Organization's (WHO) International Agency for Research on Cancer (IARC), "outdoor air pollution is carcinogenic to humans, with the particulate matter component of air pollution most closely associated with increased cancer incidence, especially cancer of the lung. An association also has been observed between outdoor air pollution and increase in cancer of the urinary tract/bladder" (WHO website: www.who.int/media/centre/factsheets/fs313/en, accessed October 24, 2014). The WHO's report further states that ambient (outdoor) air pollution in both cities and rural areas was estimated to cause 3.7 million premature deaths worldwide per year in 2012; this mortality is due to exposure to small particulate matter (PM) of 10 microns or less in diameter (PM₁₀), which cause cardiovascular and respiratory disease, and cancers."

As stated in Section 3.13 (Air Quality), the Charleston region currently meets all national ambient air quality standards, but ozone levels in North Charleston are relatively high due to industrial and mobile sources in the area. Implementation of the Proposed Project is anticipated to generate diesel particulate matter (DPM) (EPA 2015g), a known Hazardous Air Pollutant (HAP).

DPM is not directly measured by the EPA or state monitoring sites; however, the size of diesel particulates that are of greatest health concern are those in the categories of fine and ultra-fine particles (EPA 2015c). Fine particles, 2.5 microns or less in diameter (also known as PM_{2.5}), are a

criteria pollutant and measured in the area. $PM_{2.5}$ measurements are used to assess the DPM emissions near the Project site. Ultrafine particles are a subset of $PM_{2.5}$ emissions and therefore are included as part of the monitored $PM_{2.5}$ data.

Local concerns near the Project site were identified by the Lowcountry Alliance for Model Communities (LAMC) in their Area Revitalization Plan (LAMC 2010): “that SCDHEC found in a recent study that temporary saturation monitors in Chicora/Cherokee, Union Heights, Howard Heights, and Accabee showed slightly higher $PM_{2.5}$ readings in the Charleston Neck Area than regional averages, likely due to traffic congestion. Of the four neighborhoods sampled, Howard Heights had the highest levels, while Chicora/Cherokee had the lowest. However, the results demonstrated that $PM_{2.5}$ levels in the Charleston Neck Area are well below national standards.”

As a result of these concerns, SCDHEC initiated the Charleston Neck Area Air Monitoring Study and installed an Air Quality Monitoring Station at Chicora Elementary School in 2009 to measure the amounts of toxic pollutants found in the air. Chicora Elementary was chosen for the study because it is located near a variety of pollution sources—cars, trucks, and buses on the highway and interstate, fueling stations, dry cleaners, and large industries. An additional study, funded by the National Institutes of Health (Assessment of Particulate Matter Levels in Vulnerable Communities in North Charleston, South Carolina prior to Port Expansion, 2014) found a potential for local increases in air pollution that should be considered by stakeholders and policymakers to ensure that adequate attention is given to the pollution trends and environmental health concerns of the residents in the Charleston Neck communities. According to information presented at a Union Heights neighborhood association meeting in August 2014, the Charleston Community Research to Action Board (CCRAB) is working on a grant proposal to install air quality monitors in homes in the study area.

3.17.5 Hazardous Material Sites and Human Health

When hazardous materials are released into the air, water or on land, they can pose a risk to human health. The study area has a known history with soil and groundwater pollutants. Hazardous materials sites in the study area are discussed in detail in Section 3.15.

Local concerns near the Proposed Project were identified by the LAMC in their Area Revitalization Plan (April 2010). As part of a grant received from the National Institute of Environmental Health Sciences, LAMC and the University of South Carolina’s Arnold School of Public Health are conducting a four-year environmental monitoring program that includes soil testing for hazardous materials. LAMC performed soil sampling in the areas to the west of the Project site in 2011 and 2012. Preliminary results identified concentrations of arsenic and lead at levels of potential concern to local residents. Upon completion of the soil sampling study, the study findings will be compared to EPA standards to determine whether an existing soil risk to human health is present in the study area.

Lead contaminated soil can pose a risk to human health through direct ingestion, uptake in vegetable gardens, or tracking into homes. The EPA's standard for lead in bare soil in play areas is 400 ppm by weight and 1,200 ppm for non-play areas.

3.17.6 Socioeconomics and Human Health

As noted in the Socioeconomic Resources section, there is a notable absence of grocery stores in the study area. Portions of the study area are identified as food deserts, which the USDA defines as a "census tract with a substantial share of residents who live in low-income areas that have low levels of access to a grocery store or healthy, affordable food retail outlet." Lack of access to healthy foods contributes to a poor diet and can lead to higher levels of obesity and other diet-related diseases, such as diabetes and heart disease.

3.17.7 Emergency Response Times and Human Health

A risk to human health can result from a lack of emergency service providers or inadequately spaced dispatch centers/garages. As identified in Section 3.16 – Socioeconomics and Environmental Justice, there are no hospitals or active emergency medical stations located near the Proposed Project, and the City of North Charleston recently consolidated two separate fire stations into a new larger Station 2 located at the corner of Carner Avenue and Clement Avenue.

According to the Charleston County Comprehensive Plan (October 2014), response time goals adopted by Charleston County EMS for urban/suburban areas are:

- Acceptable – Response time less than 8 minutes 80 percent of the time
- Marginal – Response time between 8 and 15 minutes
- Unacceptable – Response time greater than 15 minutes

3.18 SECTION 4(f) AND 6(f) RESOURCES

3.18.1 Introduction

Section 4(f) of the USDOT Act (49 U.S.C. § 303(c)) protects publicly owned parks, recreation areas, wildlife and waterfowl refuges, and historic properties or archaeological sites (whether publically or privately owned) on or eligible for listing on the NRHP (collectively "Section 4(f) properties"). The FRA, as an operating administration within USDOT, may not approve the use of a Section 4(f) property unless it determines that there is no feasible and prudent alternative to avoid the use of the property and the action includes all possible planning to minimize harm resulting from such use, or the project has a *de minimis* impact consistent with the requirements of Title 49 U.S.C. section 303(d).