ANNEX 5 Assessment of the Sources and Sinks of Greenhouse Gas Emissions Not Included

Although this report is intended to be a comprehensive assessment of anthropogenic[1] sources and sinks of greenhouse gas emissions for the United States, certain sources have been identified but not included in the estimates presented for various reasons. Before discussing these sources, however, it is important to note that processes or activities that are not *anthropogenic in origin* or do not result in a *net source or sink* of greenhouse gas emissions are intentionally excluded from a national inventory of anthropogenic greenhouse gas emissions, in line with guidance from the IPCC in their guidelines for national inventories.

Given a source category that is both anthropogenic and results in net greenhouse gas emissions, reasons for not including a source related to an anthropogenic activity include one or more of the following:

- Though an estimating method has been developed, data were not adequately available to calculate emissions.
- Emissions were implicitly accounted for within another source category (e.g., CO_2 from Fossil Fuel Combustion).

It is also important to note that the United States believes that the sources discussed below are very low in comparison with the overall estimate of total U.S. greenhouse gas emissions, and not including them introduces a very minor bias. In general, the emission sources described in this annex are for source categories with methodologies introduced in the *2006 IPCC Guidelines* for which data collection has not been sufficient to pursue an initial estimation of greenhouse gases. Reporting of inventories to the UNFCCC under Decision 24/CP.19 requests "Where methodological or data gaps in inventories exist, information on these gaps should be presented in a transparent manner." Furthermore, these revised reporting guidelines allow a country to indicate that a disproportionate amount of effort would be required to collect data for a gas from a specific category that would be insignificant in terms of the overall level and trend in national emissions[2]. With this guidance, the United States will consider the next steps in providing transparent information on these categories in future inventories.

N_2O from Caprolactam Production

Caprolactam is a widely used chemical intermediate, primarily to produce nylon-6. All processes for producing caprolactam involve the catalytic oxidation of ammonia, with N_2O being produced as a byproduct. More research is required to determine this source's significance because there is currently insufficient information available on caprolactam production to estimate emissions in the United States.

CO_2 and CH_4 from Calcium Carbide Production

CO_2 is formed by the oxidation of petroleum coke in the production of calcium carbide. These CO_2 emissions are implicitly accounted for in the storage factor calculation for the non-energy use of petroleum coke in the Energy chapter. CH_4 may also be emitted from the production of calcium carbide because the petroleum coke used in the process contains volatile organic compounds, which form CH_4 during thermal decomposition. EPA will continue research to determine if calcium carbide production and consumption data are available for the United States. If these data are available, calcium carbide emission estimates will be included in this source category.

Miscellaneous SF_6 Uses

Sulfur hexafluoride (SF_6) is used in several applications for which estimates have not been provided in this inventory. Sulfur hexafluoride may be emitted from the production, leakage, and dismantling of radar, tracer, and night vision equipment. Emissions from this source are believed to be minor, and no data were available for estimating the

[1] The term "anthropogenic," in this context, refers to greenhouse gas emissions and removals that are a direct result of human activities or are the result of natural processes that have been affected by human activities (*2006 IPCC Guidelines for National Greenhouse Gas Inventories*).

[2] Paragraph 37(b) of Decision 24/CP.19 "Revision of the UNFCCC reporting guidelines on annual inventories for Parties included in Annex I to the Convention." See < http://unfccc.int/resource/docs/2013/cop19/eng/10a03.pdf#page=2>.

emissions. Sulfur hexafluoride may be used in foam insulation, for dry etching, in laser systems, for indoor air quality testing, for laboratory hood testing, for chromatography, in tandem accelerators, in loudspeakers, in shock absorbers, and for certain biomedical applications. Emissions from this source are believed to be minor, and no data were available for estimating the emissions. Sulfur hexafluoride may be emitted from the production, breakage, or leakage of soundproof double-glazed windows. Emissions from this source are believed to be minor, and no data were available for estimating the emissions. Sulfur hexafluoride may be emitted from applications involving the production of sport shoes, tires, and tennis balls. Emissions from this source are believed to be minor, and no data were available for estimating the emissions. Sulfur hexafluoride may be emitted from applications involving tracer gasses to detect leakage from pressure vessels and as a tracer gas in the open air. Emissions from this source are believed to be minor, and no data were available for estimating the emissions.

CO_2 from Non-Hazardous Industrial Waste Incineration and Medical Waste Incineration

Waste incineration is incorporated in two sections of the Energy chapter of the inventory: in the section on CO2 emissions from waste incineration, and in the calculation of emissions and storage from non-energy uses of fossil fuels. The former section addresses fossil-derived materials (such as plastics) that are discarded as part of the municipal wastestream and combusted (generally for energy recovery). The latter addresses two types of combustion: hazardous waste incineration of organic materials (assumed to be fossil-derived), in which regulated wastes are burned without energy recovery, and burning of fossil-derived materials for energy recovery.

There are two additional categories of waste incineration that are not included in our calculus: industrial non-hazardous waste and medical waste incineration. Data are not readily available for these sources. A preliminary analysis was conducted based on a study of hospital/ medical/ infectious waste incinerator (HMIWI) facilities in the United States. Based on that study's information of waste throughput and an analyses of fossil-based composition of the waste, it was determined that annual greenhouse gas emissions for medical waste incineration would be below 500 kt CO_2 Eq./year and considered insignificant for the purposes of inventory reporting under the UNFCCC.[3]

[3] Paragraph 37(b) of Decision 24/CP.19 "Revision of the UNFCCC reporting guidelines on annual inventories for Parties included in Annex I to the Convention." See < http://unfccc.int/resource/docs/2013/cop19/eng/10a03.pdf#page=2>.