CHAPTER 3

SOLID WASTE DISPOSAL

BOX 3.2 (CONTINUED)

Plume measurements are designed to measure the emissions from an entire SWDS by measuring the difference in CH_4 flux in a transect screen downwind and upwind from the SWDS. Emissions might be assessed comparing increase in CH_4 concentrations with tracer concentrations (e.g., from a known amount of N_2O or SF_6 released on the SWDS) or using a dispersion model. Variations of this method are used around the world by Czepiel *et al*. (1996), Savanne *et al*. (1997), Galle *et al*., (1999) and Hensen and Scharff (2001). The advantage of the method is its accuracy and its possibility to measure emissions from the entire SWDS, this being very effective to cope with spatial variation. However, the method is very expensive and normally only applied for one or a few specific days. Therefore the result seems to be not representative for the annual average emissions from the site (Scharff *et al*., 2003). For this reason Scharff *et al*. (2003) developed a stationary version of the mobile plume measurement (SPM) for plume measurements around a SWDS for longer times.

At this moment (2006), there is no scientific agreement on what methodology is preferred to obtain annual average emissions from an entire SWDS. Intercomparisons of methods are performed by Savanne *et al*. (1995) and Scharff *et al*. (2003) and the conclusion is more or less that no single method can deal with spatial and temporal variability and is yet affordable. According to Scharff *et al*. (2003) the mass-balance method and the static plume method are the best candidates for further development and validation. However there has been little scientific discussion on this conclusion at the moment of writing of the *Guidelines*.

3.4 CARBON STORED IN SWDS

Some carbon will be stored over long time periods in SWDS. Wood and paper decay very slowly and accumulate in the SWDS (long-term storage). Carbon fractions in other waste types decay over varying time periods (see Half-life under Section 3.2.3.)

The amount of carbon stored in the SWDS can be estimated using the FOD model (see Annex 3A.1). The long-term storage of carbon in paper and cardboard, wood, garden and park waste is of special interest as the changes in carbon stock in waste originating from harvested wood products which is reported in the AFOLU volume (see Chapter 12, Harvested Wood Products). The FOD model of this Volume provides these estimates as a by-product. The *waste composition* option calculates the long-term stored carbon from wood, paper and cardboard, and garden and park waste in the SWDS, as this is simply the portion of the DOC that is not lost through decay (the equations to estimate the amount are given in Annex 3A.1). When using *the bulk waste* option it is necessary to estimate the appropriate portion of DOC originating from harvested wood products in the total DOC of the waste, before finding the amounts of long-term stored carbon. When country-specific estimates are not available, the IPCC default fractions of paper and cardboard, wood, and garden and park waste can be used.

The long-term stored carbon in SWDS is reported as an information item in the Waste sector. The reported value for waste derived from harvested wood products (paper and cardboard, wood and garden and park waste) is equal to the variable 1B, $\Delta C_{HWP\ SWDS\ DC}$, i.e., the carbon stock change of HWP from domestic consumption disposed into SWDS of the reporting country used in Chapter 12, Harvested Wood Products, of the AFOLU Volume. This parameter as well as the annual CH_4 emissions from disposal of HWP in the country can be estimated with the FOD model (see sheet HWP in the spreadsheet).

3.5 COMPLETENESS

Previous versions of the *IPCC Guidelines* have focused on emissions from MSW disposal sites, although inventory compilers were encouraged to consider emissions from other waste types. However, it is now recognised that there is often a significant contribution to emissions from other waste types. The *2006 Guidelines* therefore provide default data and methodology for estimating the generation and DOC content of the following waste types:

- Municipal Solid Waste (MSW) – the default definition and composition is given in Chapter 2,
- Sewage sludge (from both municipal and industrial sewage treatment),
- Industrial solid waste (including waste from wood and paper industries and construction and demolition waste, which may be largely inert materials, but also include wood as a source of DDOCm),