

Influence of Growing-Season Meteorology on X/Q Values for Carbon-14 Dose Assessment

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ABSTRACT

Nuclear utilities were required to report Carbon-14 releases in gaseous effluents beginning with the reporting period for calendar year 2010. In addition to reporting quantities released, licensees were also required to report resulting doses from airborne effluent exposure pathways. For most licensees, these doses are dominated by C-14 incorporated into vegetation which contributes to various ingestion pathway exposures. Carbon-14 concentrations in vegetation are proportional to the X/Q dispersion factors, which are highly dependent on meteorological conditions.

This presentation will discuss the influence of time of day and season of year on the X/Q values used to estimate C-14 doses. The effects of wind speed, wind direction, and atmospheric stability class are presented with regard to their influence on the X/Q values.

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