

REGULATORY ANALYSIS

DRAFT REGULATORY GUIDE (DG)-4030 USE OF ARCON METHODOLOGY FOR CALCULATION OF ACCIDENT-RELATED OFFSITE ATMOSPHERIC DISPERSION FACTORS (Proposed New Regulatory Guide 4.28)

1. Introduction

This document presents the regulatory analysis of the U.S. Nuclear Regulatory Commission's (NRC's) determination of whether to issue DG-4030, "Use of ARCON Methodology for Calculation of Accident-Related Offsite Atmospheric Dispersion Factors." The analysis provides the public with an insight into how the NRC arrives at a decision.

2. Statement of the Problem

NRC regulatory guides provide approaches that the staff considers acceptable for meeting the regulatory requirements addressed by the specific guide. At the same time, an applicant has the flexibility to propose alternate approaches to the guidance so long as it demonstrates that the applicable regulatory requirements are still met. Regulatory Guide (RG) 1.194 endorses the use of the ARCON computer code for calculating accident-related onsite (control room) atmospheric dispersion values, otherwise known as atmospheric relative concentration or χ/Q values. RG 1.145 endorses the methodology incorporated by the PAVAN computer code for calculating accident-related, offsite atmospheric dispersion values at the exclusion area boundary (EAB) and the low population zone (LPZ).

NRC staff has received topical reports and licensing applications proposing the use of the ARCON computer code as an alternate approach to calculating χ/Q values at the EAB and the LPZ. To address this alternate approach, guidance should be provided to industry for complying with and implementing the NRC requirements by endorsing the use of the ARCON computer code to calculate offsite dispersion values at the EAB and LPZ.

3. Objective

The objective of this regulatory action is to assess the need to issue a RG to address the use of the ARCON methodology for calculation of accident-related offsite atmospheric dispersion factors.

4. Identification and Analysis of Alternative Approaches

The NRC staff considered the following alternative approaches:

1. do not issue a regulatory guide.
2. issue a regulatory guide to address the use of the ARCON methodology for calculation of accident-related offsite atmospheric dispersion factors.

Alternative 1: Do Not Issue the Regulatory Guide

Under this alternative, the NRC would not issue the new RG and there would be no formal guidance from the NRC on the use of the ARCON methodology for the calculation of accident-related offsite χ /Q values. There would be no immediate costs to the NRC related to developing the new RG. However, not providing clear guidance has the potential for introducing unnecessary uncertainty and extending the timeframe and costs, to both potential applicants and the NRC staff, for both pre-submittal interactions and reviews of an application or topical report. This alternative would limit the NRC staff's opportunity for developing a standardized review approach and providing a transparent basis for the NRC's decision on the acceptability or unacceptability of such a proposal in a topical report or application. This alternative may also require additional staff time to conduct non-standardized reviews and may result in more expensive and lengthy application reviews at an additional cost to the applicant. For example, a lack of clear guidance may result in an increased number of requests for additional information (RAI) during the staff's review and require increased levels of interaction between staff and applicants during both the pre-application and application review periods.

Alternative 2: Issue the Regulatory Guide

Under this alternative, the NRC would issue the new RG to address the use of the ARCON methodology for calculation of accident-related offsite atmospheric dispersion factors. The RG would outline the staff's acceptable processes and considerations for the alternative methodology and would incorporate information specific to offsite dispersion modeling and review practices. This would ensure that the applicable guidance is current and accurately reflects the NRC staff's position. The benefits to NRC staff and its applicants would be enhanced efficiency, effectiveness, and clarity in using established guidance, while reviewing, or developing, the offsite dispersion analysis in topical reports and applications. The cost to the NRC would be associated with preparing and issuing a new RG. The cost to the public would be the voluntary costs associated with reviewing and providing comments to NRC during the public comment period. Applicants would not likely incur many costs under this alternative because the actions to develop guidance would rest with the NRC staff. However, the availability of this RG to inform the staff's review could result in schedule efficiencies for an applicant and provide a clearer picture of the information necessary to meet the applicable regulatory requirements for an application or topical report specific to their proposed use.

5. Comparison of Alternatives

The two alternatives were compared with respect to cost and benefits.

With respect to cost for Alternative 1, there would be no immediate costs to the NRC related to developing the new RG. However, not providing clear guidance has the potential for introducing unnecessary uncertainty and extending the timeframe and costs, to both potential applicants and the NRC staff, for both pre-submittal interactions and reviews of an application or topical report. This alternative may also require additional staff time to conduct non-standardized reviews and may result in more expensive and lengthy application reviews at an additional cost to the applicant. Under Alternative 2, the cost to the NRC would be associated with preparing and issuing a new RG. Applicants would not likely incur many costs under this alternative because the actions to develop guidance would rest with the NRC staff. However, the availability of this RG to inform the staff's review could result in schedule efficiencies for an applicant and give the applicant a clearer picture of the information necessary to meet the

applicable regulatory requirements for an application or topical report specific to their proposed use.

With respect to benefits, Alternative 1 would not provide any benefits to the public, applicants, or the NRC. This alternative does not address the approach to calculate offsite dispersion values using the ARCON model. The NRC would continue to review each application on a case-by-case basis. Alternative 2, however, would provide value to both NRC staff and its applicants through enhanced efficiency and effectiveness, and through the use of a common guidance document as the technical basis for the calculation of accident-related offsite χ /Q values in license applications and topical reports.

6. Decision Rationale

Based on this regulatory analysis, the NRC staff concludes that the issuance of a new RG is warranted. The action will enhance regulatory consistency and remove potential confusion associated with using a methodology not generically approved by the NRC by providing specific guidance on the use of the ARCON methodology for calculation of accident-related offsite atmospheric dispersion factors. The proposed action would provide increased regulatory stability as the new RG is expected to reduce the need for RAIs and the need for applicants to perform additional analyses to address them. As a result, time and costs incurred by the NRC and by applicants, in applications related to the referenced subject, are expected to be reduced. In summary, the benefits of issuing this RG are estimated to be greater than the benefits of not issuing a new RG.