

12/19/1978

VOC141219781

Category: 14 – Cutback Asphalt

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Office of Air Quality Planning and Standards
Research Triangle Park, North Carolina 27711

DATE: December 19, 1978

SUBJECT: Cutback Asphalt - Acceptable RACT Regulation

FROM: Richard G. Rhoads, Director
Control Programs Development Division

TO: Director, Air and Hazardous Materials Division, Regions I-X

A number of issues have arisen concerning the Cutback Asphalt Control Techniques Guideline (CTG) and the exemptions that are appropriate for that CTG category. While it is late in the SIP revision process, I believe that it is still in order to clarify the issue. This memo is intended for that purpose.

To illustrate the exemptions issue, attached is a sample regulation for limiting the use of cutback asphalt in road paving and maintenance operations. The regulation is considered consistent with the CTG document and, therefore, an approvable RACT regulation. It should not be construed as a binding requirement on the States to adopt this sample.

The degree of use of emulsified asphalt varies widely across the nation depending on factors such as the availability of competent emulsified asphalt manufacturers and the experience and established policies of highway engineers. Even though emulsified asphalt technology is available, it may take an extended period of time for certain States with limited or no experience with emulsified asphalt to phase its use into the States' highway paving and maintenance programs. A transition period would be necessary for manufacturers to gear up to producing the various emulsions, highway engineers to obtain specifications and data applicable to their climatic conditions, equipment operators to be trained, and possible governmental issues to be resolved. In other words, a reasonable transition period from cutback to emulsified asphalt for one State may be unreasonable, or even impossible, for another State. Regional Offices should recognize that the time periods for compliance with regulations limiting use of cutback asphalt will justifiably vary from State to State. The compliance date suggested by the Asphalt Institute is June 1, 1980.

There are three specific problems associated with emulsified asphalt that are common to most States. These are:

1. Cannot be stockpiled for extended periods of time.
2. Limited experience with use as a penetrating prime coat.

3. Cannot be used during cold weather.

Cutback asphalts, and emulsions substituted for cutback, are used either as sprayed liquids or as binder in a patch mix. The patch mix is a mixture of the asphalt binder and an aggregate and is used for filling potholes. Characteristically, the patch mix is stockpiled for periods of from several months to a year. Current emulsions cannot be used in such a stockpiled mix unless a solvent is added to keep the emulsion from setting up. Emulsified asphalt in a liquid state can only be stored for up to four weeks and then only in heated or insulated containers preferably with some type of agitation. Liquid emulsions, however, should be available on short notice alleviating the problem of long-life stockpiling. The example regulation contains provisions for use of cutback asphalt where it can be demonstrated that long-life stockpiling is necessary. Emulsion manufacturers are currently working on emulsions that can be stockpiled for longer periods of time.

The cutback asphalts used for prime coats are low viscosity with high diluent contents. There is, therefore, a high degree of VOC evaporation from priming operations. At least one manufacturer makes a strong claim to having satisfactorily solved the problem of getting good penetration with an emulsified asphalt. Until such time as this or other priming emulsions are proven acceptable to users, an exemption for prime coats may be necessary and will be approvable. Fortunately, prime coats are used to prepare soil for new road construction which will most likely occur in rural areas. In general, priming is not necessary for city streets, driveways, and parking lots.

Emulsified asphalt does not set up properly at temperatures below 50 degrees F. If roadway repair is necessary during colder periods, cutback asphalt must be used. States may specify months during the year when cutback asphalt may be used. These months should include the time of the year when meteorological conditions are such that temperatures do not linger above 50 degrees F for periods of time adequate for emulsified asphalt application and setting. These exempted periods will coincide with the non-oxidant season and will, of course, vary nationwide.

The fourth exemption in the example regulation is in response to the fact that some cutback asphalts apparently do not set up by VOC evaporation. These are the very high viscosity cutbacks which are heated during use and set up simply by cooling off. If there are no VOC emissions, there is no reason to prohibit the use of those cutbacks for purposes of RACT. Thus, if a user can demonstrate through the manufacturers data that no VOC emissions will occur, then the cutback may be used at any time.

In some instances, manufacturers are adding solvent to emulsions to improve the physical properties. If such an emulsion can be used in place of a cutback, and the emulsion contains less solvent than the replaced cutback, States may wish to allow the emulsion as an interim measure until a switch can be made to a straight emulsion which contains no solvent.

It is important to note that there may be other unique problems that are not discussed in this memo. Since RACT is a case-by-case determination, these should be discussed at the State level and exemptions allowed as necessary.

Please advise me if you do encounter any additional requests for exemptions beyond those described in this memo.

Finally, the figures in the control techniques guideline document for calculating VOC emissions from cutback asphalt were based on an average solvent content of 35 percent. Information will be sent at a later date for more accurately calculating emission rates for the various cutbacks.

In summary, the attached sample regulation can be considered RACT for controlling use of cutback asphalt under the conditions specified above concerning the exemptions. In keeping with our goal to achieve consistency among State regulations, States should be encouraged but not required to follow this sample as a guideline in developing their cutback asphalt regulation.

If you have any questions, please contact Roger Powell at 629-5437.

Attachment

cc: W. Barber

Attachment

EXAMPLE RACT REGULATION CUTBACK ASPHALT

1. Definitions:

Asphalt: The dark-brown to black cementitious material (solid, semisolid, or liquid in consistency) of which the main constituents are bitumens which occur naturally or as a residue of petroleum refining.

Cutback Asphalt: Any asphalt which has been liquefied by blending with petroleum solvents (diluent) or, in the case of some slow cure asphalts (road oils), which have been produced directly from the distillation of petroleum.

Penetrating Prime Coat: An application of low-viscosity liquid asphalt to an absorbent surface in order to prepare it for paving with an asphalt concrete.

2. Regulation:

(a) This regulation applies to use of asphalt in highway paving and maintenance operations.

(b) After June 1, 1980*, no person shall cause, allow, or permit the sale, offering for sale, use, or application of cutback asphalt, or an emulsified asphalt containing petroleum solvents (diluent), except as provided below:

- (1) Where the use or application commences on or after (month) of any year and such use or application is completed by (month) of the following year;
- (2) Where long-life (longer than 1 month) stockpile storage is necessary;
- (3) Where the asphalt is to be used solely as a penetrating prime coat; or
- (4) Where the user can demonstrate that there are no emissions of organic compounds from the asphalt under conditions of normal use.

*This date should be negotiated on a State-specific basis.