

**ATTACHMENT 11**  
**ENVIRONMENTAL ASSESSMENT**  
**EASTMAN CHEMICAL COMPANY**  
**FOOD CONTACT NOTIFICATION**

1. **Date:** September 12, 2007
2. **Name of Applicant/Notifier:** Eastman Chemical Company
3. **Address:** Post Office Box 511, B-54D  
Kingsport, Tennessee 37662-5051

All communications on this matter are to be sent in care of Counsel for Notifier:  
Devon Wm. Hill, Partner  
Keller and Heckman LLP  
1001 G Street, N.W., Suite 500 West  
Washington, D.C. 20001  
Telephone: (202) 434-4279  
Facsimile: (202) 434-4646  
E-mail: [hill@khlaw.com](mailto:hill@khlaw.com)

4. **Description of the Proposed Action**

The action requested in this notification is to permit the use of 1,4-benzenedicarboxylic acid, bis(2-ethylhexyl) ester as a plasticizer (1) at a level not to exceed 35 percent by weight of finished plasticized vinyl chloride polymer formulations used in repeated use food-contact applications at temperatures no greater than 100°C, (2) in adhesives in accordance with 21 C.F.R. § 175.105, (3) in pressure sensitive adhesives in accordance with 21 C.F.R. § 175.125, and (4) as a coating or as a component of paper or paperboard intended for use in contact with dry foods with no free surface fat or oil in accordance with Section 21 C.F.R. § 176.180.

The action is needed to provide for an alternative plasticizer for use in applications for adhesives, pressure sensitive adhesives, and paper and paperboard in contact with dry food.<sup>1</sup>

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<sup>1</sup> The proposed use of the food contact substance (FCS) in repeated use food-contact articles (e.g., conveyer belts) qualifies for categorical exclusion under 21 *CFR* 25.32(j). Hence, this environmental assessment (EA) concerns the proposed use of the FCS in the other applications (adhesives, pressure sensitive adhesives, and paper and paperboard in contact with dry food).

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The Notifier does not intend to produce finished food packaging from the subject plasticizer. Rather, the substance will be sold to manufacturers engaged in the production of adhesives, pressure sensitive adhesives, and paper and paperboard. Food-contact articles produced with the subject substance will be utilized in patterns corresponding to the national population density and will be widely distributed across the country. Therefore, it is anticipated that disposal will occur nationwide; according to the U.S. Environmental Protection Agency's (EPA) 2005 update regarding municipal solid waste in the United States: 54.3% of municipal solid waste generally was land disposed, 13.6% was combusted, and 32.1% was recovered for recycling and composting.<sup>2</sup>

The types of environments present at and adjacent to these disposal locations are the same as for the disposal of any other food-contact material in current use. Consequently, there are no special circumstances regarding the environment surrounding either the use or disposal of food-contact materials prepared from the subject substance.

#### **5. Identification of Substance that is the Subject of the Proposed Action**

The food contact substance that is the subject of this Notification is 1,4-benzenedicarboxylic acid, bis(2-ethylhexyl) ester (CAS Reg. No. 6422-86-2).

#### **6. Introduction of Substances into the Environment**

Under 21 C.F.R. § 25.40(a), an environmental assessment ordinarily should focus on relevant environmental issues relating to the use and disposal from use, rather than the production, of FDA-regulated articles. Moreover, information available to the Notifier does not suggest that there are any extraordinary circumstances in this case indicative of any adverse environmental impact as a result of the manufacture of the subject substance. Consequently, information on the manufacturing site and compliance with relevant emissions requirements is not provided here.

No environmental release is expected upon the use of the subject substance to fabricate packaging materials. In these applications, the subject substance is expected to be used to fabricate adhesives, pressure sensitive adhesives, and paper and paperboard, and will be entirely incorporated into the finished food-contact article. Any waste materials generated in this process, *e.g.*, plant scraps, are expected to be disposed of as part of the packaging manufacturer's overall nonhazardous solid waste in accordance with established procedures.

Disposal by the ultimate consumer of food-contact materials (*i.e.*, articles employing adhesives, pressure sensitive adhesives, and paper and paperboard articles) containing the subject substance will be primarily by sanitary landfill or incineration. The subject substance consists of carbon, hydrogen, and oxygen. These are elements that are commonly found in municipal solid waste. Based on the proposed use of the FCS and the anticipated market volume (available in a

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<sup>2</sup> *Municipal Solid Waste in the United States: 2005 Facts and Figures*, EPA530-R-06-011, U.S. Environmental Protection Agency (5305W), Washington DC, 20460, October 2006.

confidential attachment to the FCN), we have concluded that the FCS will make up a very small portion of the total municipal solid waste currently combusted, the FCS will not significantly alter the emissions from properly operating municipal solid waste combustors, and incineration of the FCS will not cause municipal waste combustors to threaten a violation of applicable emissions laws and regulations (40 C.F.R. Part 60 and/or relevant state and local laws).

In light of EPA's regulations governing municipal solid waste landfills, only extremely small amounts, if any, of the subject substance are expected to enter the environment as a result of the landfill disposal of food-contact articles. EPA's regulations require new municipal solid-waste landfill units and lateral expansions of existing units to have composite liners and leachate collection systems to prevent leachate from entering ground and surface water, and to have groundwater monitoring systems. (40 C.F.R. Part 258.) Although owners and operators of existing active municipal solid waste landfills that were constructed before October 9, 1993 are not required to retrofit liners and leachate collection systems, they are required to monitor groundwater and to take corrective action as appropriate.

## **7. Fate of Emitted Substances in the Environment**

### **(a) Air**

No significant effect on the concentrations of and exposures to any substances in the atmosphere are anticipated due to the proposed use of the subject substance. The substance is a liquid with a boiling point of approximately 400°C and, therefore, does not readily volatilize. Thus, no significant quantities of any substances will be released upon the use and disposal of food-contact articles manufactured with the subject substance.

The products of complete combustion of the subject substance are carbon dioxide and water; the concentrations of these substances in the environment will not be significantly altered by the proper incineration of the subject substance in the amounts utilized for food packaging applications.

### **(b) Water**

No significant effects on the concentrations of and exposures to any substances in fresh water, estuarine, or marine ecosystems are anticipated due to the proposed use of the subject substance. No significant quantities of any substance will be added to these water systems upon the proper incineration of food packaging employing the subject substance, nor upon its disposal in landfills due to the anticipated extremely low levels of aqueous extraction of the subject substance, as the substance is an organic ester that has a low solubility in water (0.4 µg/L (parts per billion)).

### **(c) Land**

Considering the factors discussed above, no significant effects on the concentrations of and exposures to any substances in terrestrial ecosystems are anticipated as a result of the

proposed use of the subject substance. In particular, because of its low solubility in water, extremely low levels of aqueous extraction of the subject substance are expected to occur under normal environmental conditions when finished food-contact materials are disposed of. Furthermore, the very low production of the subject substance for use in food-contact applications precludes any substantial release to the environment of the subject substance. Thus, there is no expectation of any meaningful exposure of terrestrial organisms to this substance as a result of its proposed use.

Considering the foregoing, we respectfully submit that there is no reasonable expectation of a significant impact on the concentration of any substance in the environment due to the proposed use of the subject substance in the manufacture of articles intended for use in contact with food.

#### **8. Environmental Effects of Released Substances**

As discussed previously, the only substances that may be expected to be released to the environment upon the use and disposal of food packaging materials fabricated with the use of the subject substance consist of extremely small quantities of combustion products and extractables. Thus, no adverse effect on organisms in the environment is expected as a result of the disposal of articles containing the subject substance. In addition, the use and disposal of food-contact articles containing the subject substance are not expected to threaten a violation of applicable laws and regulations, *e.g.*, the EPA's regulations in 40 C.F.R. Part 60 that pertain to municipal solid waste combustors, and Part 258 that pertain to landfills.

#### **9. Use of Resources and Energy**

As is the case with other food packaging materials, the production, use and disposal of the subject substance involves the use of natural resources such as petroleum products, coal, and the like. However, the use of the subject substance in the fabrication of food-contact materials is not expected to result in a net increase in the use of energy and resources, since the subject substance is intended to be used in packaging which will be used in place of other plasticizers now on the market for use in the same food packaging applications. Plasticizers currently used in the applications in which the subject substance is anticipated to be used include those that are permitted under 21 C.F.R. §§ 175.105 ("Adhesives"), 175.125 ("Pressure Sensitive Adhesives"), 176.180 ("Components of paper and paperboard in contact with dry food"), 177.2600 ("Rubber articles intended for repeated use"), and 178.3740 ("Plasticizers in polymeric substances"), and under various effective Food Contact Notifications.

The partial replacement of these plasticizers by the subject substance is not expected to have any adverse impact on the use of energy and resources. Manufacture of the subject substance, and its use in the conversion to finished food packaging materials, will consume energy and resources in amounts comparable to the manufacture and use of the other plasticizers. Furthermore, the use proposed in this Notification is for the use of the subject substance in applications involving food packaging applications for adhesives, pressure sensitive adhesives,

and paper and paperboard in contact with dry food. Thus, it will not be used in applications that may be replacements for polyethylene terephthalate (PET) soda bottles or high density polyethylene (HDPE) milk bottles. As PET and HDPE bottles are the predominant food packaging articles recovered for recycling, and as the subject substance will not be used in such applications, articles fabricated from the subject substance will be disposed of by means of sanitary landfill and incineration. Packaging materials produced using the subject substance are expected to be disposed of according to the same patterns when they are used in place of the currently used plasticizers in the applications for which clearance of the subject substance is being sought in this Notification. Thus, there will be no impact on current or future recycling programs.

**10. Mitigation Measures**

As shown above, no significant adverse environmental impacts are expected to result from the use and disposal of food-contact materials fabricated using the subject substance. This is primarily due to the minute levels of leaching of potential migrants expected from finished articles employing the subject substance, the insignificant impact on environmental concentrations of combustion products of the subject substance, and the close similarity of the subject substance to the plasticizers it is intended to replace. Thus, the use of the subject substance as proposed is not reasonably expected to result in any new environmental problem requiring mitigation measures of any kind.

**11. Alternatives to the Proposed Action**

No potential adverse environmental effects are identified herein that would necessitate alternative actions to those proposed in this Notification. The alternative of not approving the action proposed herein would simply result in the continued use of the plasticizers that the subject substance would otherwise replace; such action would have no environmental impact. In view of the fact that the subject substance is not expected to enter the environment in more than minute quantities upon the use and disposal of finished food-contact articles, and the absence of any significant environmental impact which would result from its use, the establishment of an effective Food Contact Notification to permit the use of the subject substance as described herein is environmentally safe in every respect.

**12. List of Preparers**

Lester Borodinsky, Staff Scientist, Keller and Heckman LLP, 1001 G Street, N.W., Suite 500 West, Washington, D.C. 20001.

ENVIRONMENTAL ASSESSMENT  
EASTMAN CHEMICAL COMPANY

13. Certification

The undersigned official certifies that the information provided herein is true, accurate, and complete to the best of his knowledge.

Date: 9-13-07



Devon Wm. Hill  
Counsel for Eastman Chemical Company