BEFORE THE BOARD OF ENVIRONMENTAL REVIEW
OF THE STATE OF MONTANA

In the matter of the proposed adoption of New Rule I State Solid Waste Management and Resource Recovery Plan	))))	NOTICE OF ADOPTION (SOLID WASTE)

TO: All Concerned Persons

1. On November 18, 2005, the Board of Environmental Review published MAR Notice No. 17-235 regarding a notice of public hearing on the proposed adoption of the above-stated rule at page 2016, 2005 Montana Administrative Register, issue number 20.

2. The Board has adopted New Rule I (17.50.301) exactly as proposed.

3. The following comments were received and appear with the Board's responses:

COMMENT NO. 1: One commentor asked whether DEQ can enforce progress toward meeting the new and updated solid waste reduction goals, which include recycling and compost targets for the state. The new goals, which are set by the Legislature in the Montana statutes at 75-10-803, MCA, are discussed in Chapter 5.

RESPONSE: As stated throughout the draft plan, the recycling and composting goals are voluntary. They are not implemented by mandatory rules. The intent of the plan is to achieve the goals by educating the public through workshops, by offering incentives to consumers and the private sector through recycling tax credits, by having available a mobile glass pulverizer that can allow glass to be reused, and by having the state use its purchasing power, for instance, to increase the demand for and use of recycled paper. No modification to the plan is necessary.

COMMENT NO. 2: A commentor asked whether the Department can measure progress toward achieving the recycling and composting goals.

RESPONSE: In the draft plan at page 39, Chapter 5, Integrated Waste Management, and pages 141-42, Appendix B, the Department described how it seeks to measure progress toward meeting the recycling and composting goals set in law and in the plan. The Department surveys solid waste landfills, transfer facilities, composters and recyclers to determine the amount of waste disposed of and the amounts composted and recycled. The comment has been adequately addressed in the plan, and no modification is needed.

COMMENT NO. 3: A commentor addressed brominated flame retardants in Electronics Recycling (discussed in Chapter 12, Special Wastes). The commentor:

a. disagreed with the classification, on page 109 of the plan, of brominated flame retardants (BFRs) as hazardous materials. The commentor cited research published by the European Union, the U.S. National Academy of Sciences, and the U.S. Consumer Product Safety Commission as indicating that the primary BFRs used in electronics applications are not hazardous.

b. disagreed with the statement on page 109 of the plan that: "Due to the halogenated substances found in plastics, both dioxins and furans are generated as a consequence of recycling the metal content of electronic waste." The commentor also disagreed with a statement on page 109 of the plan that most recyclers refrain from recycling electronics waste because the recycling of plastics containing BFRs creates a risk of emissions of dioxins and furans, and because it is difficult to distinguish plastics with BFRs from those without BFRs. The commentor stated that these assertions were incorrect, and requested that they be modified. The commentor cited a research poster presented at a conference, "Dioxin 2004," that cited several published research papers for the proposition that the burning of brominated plastics does not increase dioxin or furan emissions, and that such emissions are "well within" standards. BFRs are one type of halogenated substance. The commentor also criticized the statement at p. 109 of the plan that the extrusion of plastics with BFRs, which is part of recycling, created a risk of generating dioxins and furans. The commenter cited research indicating that there is no increased risk of generating dioxins or furans from the extrusion of plastic.

c. stated that the recycling of plastics, including those that contain flame retardants, should be encouraged, not discouraged, by public policy. The commentor disagreed with statements in the plan (Chapter 12, Special Wastes, Barrier 6 on p. 111) that recycling of electronic wastes in the third world has produced harmful effects to health and the environment, that improper recycling of these wastes has been worse than landfilling, and that people might be reluctant to recycle if they thought the recycling would harm people and the environment in other countries.

<u>RESPONSE:</u> The Board responds to the comments as follows:

a. A hazardous substance "means a substance that because of its quantity, concentration, or physical, chemical, or infectious characteristics may pose an imminent and substantial threat to public health, safety, or welfare or the environment and is: 1) defined as hazardous in the federal Superfund law; 2) defined by the Environmental Protection Agency (EPA) as hazardous in Superfund regulations; or 3) is defined as a hazardous waste under the federal hazardous waste laws, which means it must be either a listed hazardous waste, or be hazardous because of a characteristic (ignitability, corrosivity, reactivity, or toxicity). See § 75-10-701(8), MCA, § 75-10-403, MCA, and ARM 17.53.301 and 40 CFR 261.3 and 261.20.

BFRs on printed circuit boards, cables, and plastic casings are not a hazardous substance as defined in Montana law or rule. Therefore, the Board is modifying the Plan to eliminate BFRs from the list under the heading "Hazardous

Materials in Computer Waste" in Chapter 12, Special Wastes, Computer Waste, on page 109.

There is controversy about the safety of BFRs. A review article, "Brominated Flame Retardant: Cause for Concern," by an Environmental Protection Agency scientist in Environmental Health Perspectives Vol. 112, No. 1 (January 2004), a publication of the National Institute of Environmental Health Sciences, stated that: "The widespread production and use of BFRs; strong evidence of increasing contamination of the environment, wildlife, and people; and limited knowledge of potential effects heighten the importance of identifying emerging issues associated with the use of BFRs. … Overall, the toxicology database is very limited; the current literature is incomplete and often conflicting. Available data, however, raise concern over the use of certain classes of brominated flame retardants."

b. Plastics are associated with electronics waste, and, in the past, plastics containing brominated flame retardants (in computer casings, for example) were burned in uncontrolled situations to reduce their volume and to expose the metal for recycling. Dioxins and furans were produced in these circumstances. Now, many recyclers are separating plastics from metals, so the plastics are not always being burned in uncontrolled situations. However, some dioxins and furans are created when plastics are burned or heated between about 300 and 900 degrees Fahrenheit. Properly controlled heating or combustion minimizes but does not eliminate the production of dioxins and furans.

In addition, research cited by the commentor indicates that the use of brominated flame retardants in plastic does not increase the production of dioxins or furans when the plastic is burned. However, other sources indicate that heating or burning of plastics containing BFRs does create dioxins and furans. See World Health Organization, "Polybrominated Dibenzo-p-Dioxins and Dibenzofurans," Environmental Health Criteria, No 205, 1998, summarized at http://www.who.int/bookorders/anglais/detart1.jsp?sesslan=1&codlan=1&codcol=16&codcch=205 and cited in http://www.computertakeback.com/the_problem/bfr.cfm.

Therefore, the Board has made the following modifications to the Plan: The discussion under the Recycling heading, page 109, was changed to recognize that the recycling of metals associated with plastics produces some dioxins and furans, but that it is unclear if the presence of BFRs increases the total amounts of dioxins or furans produced.

Because plastics containing BFRs <u>are</u> now being recycled from electronics waste, the Board has deleted the discussion in the same paragraph stating that most recyclers do not process any plastics from electronics waste.

c. Regarding the last comment, concerning the past negative effects of improper recycling practices of electronics wastes, it is possible that those past practices may have exposed residents of third world countries to potentially harmful heavy metals, and Montanans may be reluctant to recycle electronic wastes because they may be aware of these concerns. These past practices, and the awareness of them, are properly listed in the plan as a barrier to recycling of electronic wastes.

The proper recycling of plastics, including those that contain brominated flame retardants, should be encouraged by public policy, and the plan sets policy to encourage such recycling with the changes to a. and b. above.

However, because the proposed plan was accurate in listing the risks from past practices, and the public's awareness of them, as a barrier, a modification to barrier number 6 is unnecessary.

Reviewed by: BOARD OF ENVIRONMENTAL REVIEW

_____ By: _____

JOHN F. NORTH
Rule Reviewer

JOSEPH W. RUSSELL, M.P.H.
Chairman

Certified to the Secretary of State, _____, 2006.