

# Guidance for Industry

## Dioxin in Anti-Caking Agents Used in Animal Feed and Feed Ingredients

This guidance supercedes guidance #98 of the same title, dated October 6, 1999

This guidance is intended to notify members of the feed industry of recent finding regarding the presence of dioxin congeners that may be present in anti-caking agents and to offer general advice regarding the monitoring of these products. This document has been revised in response to comments to the October 6, 1999 version.

This guidance represents the agency's current thinking on the presence of dioxin congeners in anti-caking agents. It does not create or confer any rights for or on any person and does not operate to bind the Food and Drug Administration (FDA) or public. An alternative approach may be used if such approach satisfies the requirements of the applicable statutes and regulations.

Comments and suggestions regarding this guidance document should be submitted to the Division of Dockets Management (HFV-305), Food and Drug Administration, 5630 Fishers Lane, Room 1061, Rockville, MD 20852. All comments should be identified with the Docket Number (99D-4201). Additional information on the original guidance document dated October 6, 1999 can be found in the Federal Register (Vol. 64, No. 199, October 15, 1999). Comments may be submitted at any time.

For scientific questions regarding this guidance document, contact Randall Lovell, Center for Veterinary Medicine (HFV-222), Food and Drug Administration, 7519 Standish Place, Rockville, MD 20855, 240-453-6857 e-mail: [randall.lovell@fda.hhs.gov](mailto:randall.lovell@fda.hhs.gov).

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**U.S. Department of Health and Human Services  
Food and Drug Administration  
Center for Veterinary Medicine (CVM)  
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## **Dioxin In Anti-Caking Agents Used in Animal Feed and Feed Ingredients**

Nearly two years ago, a multi-agency investigation tracked a previously unknown source of dioxins in our food supply back to a clay anti-caking agent, called ball clay, used in animal feeds and feed ingredients. Together, industry and government moved swiftly to eliminate the use of ball clay in the animal feeds and thereby remove a source of dioxins in the human food chain.

In an October 7, 1997, letter to members of the feed industry, we stated that the origin and scope of dioxins in clay deposits were unknown and, for this reason, mined clay products of all types should be used with caution in the production of animal feeds. We advised companies offering anti-caking products for animal feed uses to assure that their products were not contaminated with dioxins.

Many industry participants tested clay products used in animal feeds in 1998. In particular, the American Feed Industry Association (AFIA) led a "Dioxin Task Force" that assembled dioxin data from a variety of sources and products. Based on our experiences with ball clay, one dioxin congener, 2,3,7,8-tetrachlorodibenzodioxin (TCDD) was thought to be predominant. Consequently, TCDD was all that was reported by the Dioxin Task Force to the CVM in September 1998. Fifty-nine, non-ball clay, clay product samples were reported to all be below the limit of detection for TCDD, with the detection limit in general being below 0.75 part per trillion (ppt) measured as TCDD.

Also, in late 1998, FDA collected samples of clay and non-clay anti-caking products from feed and oilseed sites where they were being used. The Environmental Protection Agency (EPA) subjected the samples to the complete analysis for all 17 dioxin and furan congeners of toxicological importance. The results of this survey prompted FDA to share our findings and their implications for industry monitoring of clay and non-clay anti-caking products and our future plans.

In brief, nine of fifteen samples of anti-caking, flow, and pelleting aid products were found to contain detectable dioxins varying from less than 1 ppt toxicity equivalents (part per trillion TEQ) to slightly over 20 ppt TEQ. Unexpectedly, the primary dioxin congener contributing to the TEQ was 1,2,3,7,8-pentachlorodibenzodioxin (PeCDD). Very little, if any TCDD was found in the samples. None of the samples appeared to be ball clay, but were identified as montmorillonite, "bentonite," "ground clay," and even "silicate" and "lime."

FDA and EPA are continuing to investigate the sources of the more elevated samples; however, the information thus far indicates the need for increased caution in industry surveillance for dioxins in feed ingredients.

First, there is now evidence that dioxins can be present in clay and non-clay anti-caking products other than ball clay. The current findings do not discount a natural origin for these residues.

Second, dioxin congeners other than TCDD, particularly PeCDD, may be present in important amounts. Therefore, analyses for dioxins should be for the entire congener group that contributes to the TEQ measurement, rather than just TCDD. Persons retaining samples of clay extracts that were evaluated only for TCDD, for example, samples reported by the Dioxin Task Force, may wish to consider re-submitting the samples for a more thorough analysis.

Third, the significance to public health of the relatively low concentrations of dioxins found in the latest samples is presently unclear. On the one hand, these would seem to be small contributions of dioxin to the human food chain. Most of the dioxin concentrations found in the positive samples were on the order of one-one thousandth of the highest concentrations found in ball clay. On the other hand, the limited samples may not be representative of the full range of concentrations of dioxins that may be found in these products.

Because dioxins were not detected in six of fifteen samples, it appears that dioxins can be minimized or avoided altogether in anti-caking agents. All clay and non-clay anti-caking products for use in feeds or feed ingredients should be carefully monitored for dioxins, without regard to how remote or pristine the source. We recommend that companies not use any clay or non-clay anti-caking products contaminated with dioxin in animal feed and feed ingredients.

CVM plans to continue to sample regulated clay and non-clay anti-caking products for dioxins in conjunction with EPA and other government agencies. Plans are also underway to sample other feed components for dioxin. We will report back to you as new information becomes available.