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Sent: Friday, November 18, 2011 5:04 PM
To: NIOSH Docket Office (CDC)
Subject: 245 - Criteria for a Recommended Standard: Occupational Exposure to Diacetyl and 2,3-pentanedione
Attachments: Diacetyl (NIOSH Docket 245)(11-18-11).doc

IBT's comments for NIOSH Docket 245 are attached.

Regards,
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The International Brotherhood of Teamsters

Written Comments

Criteria for a Recommended Standard:
Occupational Exposure to Diacetyl and 2,3-pentanedione

Docket Number NIOSH-245

November 18, 2011

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The International Brotherhood of Teamsters (IBT) welcomes the opportunity provided by the National Institute for Occupational Safety and Health (NIOSH) to provide written comments on the draft document, "Criteria for a Recommended Standard: Occupational Exposure to Diacetyl and 2,3-pentanedione."

The IBT commends NIOSH for presenting a comprehensive review of scientific literature, a quantitative risk assessment, and valuable guidance to reduce occupational exposures to diacetyl and 2,3-pentanedione. The information presented in this document will serve as a very useful tool to adequately and effectively reduce or eliminate significant risk of health impairment from exposure to these toxic chemicals and to prevent flavorings-related lung disease in the working men and women of this country.

While the focus of this document is on diacetyl and 2,3-pentanedione, the IBT fully supports NIOSH's concern about "other flavoring substitutes with structural similarities to diacetyl...and capable of producing similar toxic effects as diacetyl," and NIOSH's recommendation "that such exposures also be considered and controlled to as low as reasonably achievable."¹

Our comments are to serve as a statement of support for this effort and to urge NIOSH to move ahead with finalizing the criteria document. We will submit additional comments to the NIOSH docket at a later date.

¹ <http://www.cdc.gov/niosh/docket/archive/pdfs/NIOSH-245/DraftDiacetylCriteriaDocument081211.pdf>

The IBT represents more than 1.4 million workers nationwide, hundreds of whom are employed in industries and jobs where diacetyl and 2-3-pentanedione, and other alpha-diketones are used. Our members perform a variety of jobs in the manufacturing of flavorings, foods, baked goods and snacks, dairy, candy, confectionary, and baking products.

Forty-one years ago, when the Occupational Safety and Health Act of 1970 was enacted, it declared that “the Secretary of Health and Human Services, on the basis of such research, demonstrations, and experiments, and any other information available to him, shall develop criteria dealing with toxic materials and harmful physical agents and substances which will describe exposure levels that are safe for various periods of employment, including but not limited to the exposure levels at which no employee will suffer impaired health or functional capacities or diminished life expectancy as a result of his work experience.”²

It was in 1985, over 16 years ago, that NIOSH conducted a health hazard evaluation at a plant in Indiana that produced flavorings for the baking industry and found severe fixed obstructive lung disease among workers in a mixing room.³ And it was on January 15, 2004, over seven years ago, that NIOSH recommended in an Alert “that employers take measures to limit employees’ occupational respiratory exposures to

² http://www.osha.gov/pls/oshaweb/owadisp.show_document?p_id=2743&p_table=OSHACT

³ <http://www.cdc.gov/niosh/hhe/reports/pdfs/1985-0171-1710.pdf>

food flavorings and flavoring ingredients in workplaces where flavorings are made or used.”⁴

Since 2006, the IBT, and its local union affiliates, have been in the forefront of efforts to encourage and assist federal and state agencies in research and regulation of occupational exposures to diacetyl and related flavoring ingredients.

In 2006, the IBT, along with the United Food and Commercial Workers International Union (UFCW), pointed to “compelling epidemiologic and toxicological evidence linking exposure to diacetyl to severe respiratory impairment and disease” and called upon the Occupational Safety and Health Administration (OSHA) to issue an Emergency Temporary Standard (ETS) and to initiate formal rulemaking to protect workers exposed to diacetyl and other harmful flavoring-related chemicals.⁵

In 2008, a Teamster local union submitted a request for a health hazard evaluation (HHE) at a flavorings manufacturing facility in Indiana.⁶ Also in 2008, NIOSH received another union request to perform an investigation of possible health hazards at a Teamster-represented bakery mix facility in Los Angeles, CA.

⁴ <http://www.cdc.gov/niosh/updates/upd-01-15-04.html>

⁵ <http://www.teamster.org/content/emergency-petition-assails-osha39s-refusal-take-action-lethal-popcorn-flavoring>

⁶ <http://www.cdc.gov/niosh/hhe/reports/pdfs/2008-0155-3131.pdf>

These investigations have resulted in important findings which are described in the draft criteria document. At both plants, NIOSH found a pattern of spirometric restriction, significantly higher than the prevalence for the U.S. adult population. At one of the plants “Employees with higher potential for exposure to flavorings had greater average annual decline in lung function and a 7-fold higher chance of abnormal lung function decline than employees in other areas with lower potential for exposure.”⁷

These findings, and previous reports, suggest that the spectrum of health effects related to flavorings may be broader than fixed obstruction, and include restrictive lung disease.⁸ And in both cases, NIOSH could not find “the results of any in-depth medical evaluations resulting from abnormal findings identified by the monitoring and surveillance program,”⁹ to determine if those with restrictive spirometry have occupational lung disease. We urge NIOSH to continue exploring this possible association.

In light of the range of possible health effects, we fully embrace NIOSH’s objective, in recommending exposure limits, “to reduce the risk of decreased lung function and the severe irreversible lung disease constrictive bronchiolitis obliterans associated with occupational exposure to these chemicals, and to help prevent other adverse health effects including but not limited to irritation of the skin, eyes, and respiratory tract in exposed workers.”

⁷ <http://www.cdc.gov/niosh/hhe/reports/pdfs/2008-0155-3131.pdf>

⁸ Ibid.

⁹ Ibid.

At one of the plants, although “none of the applicable Material Safety Data Sheets for the evaluated bulk flavorings listed diacetyl or its alpha-diketone substitutes,”¹⁰ NIOSH’s analytical results of bulk samples of liquid and powdered flavorings indicated that, aside from diacetyl, five of six contained the alpha-diketone substitute compound, 2,3-pentanedione, and three contained other alpha-diketones.¹¹ This finding confirmed the use of 2,3-pentanedione as a substitute for diacetyl in artificial butter flavorings. Research by both NIOSH and the National Institute of Environmental Health Sciences (NIEHS) “suggests that, in rats, 2,3-pentanedione causes airway epithelial damage similar to that produced by diacetyl,” signifying that “...all too often, substitution is an unreachable panacea.”¹²

Given NIOSH’s comprehensive review and quantitative assessment of human exposures, supported by animal risk assessments, the IBT supports the recommended exposure limit (REL), the action level (AL), and the short-term exposure limit (STEL) for diacetyl proposed by NIOSH; we also agree with NIOSH “that the use of an AL in conjunction with periodic monitoring of worker exposures...is helpful to protect workers.”¹³ In view of the capabilities and constraints of the analytical method, the IBT also supports the REL and STEL recommended by NIOSH for 2,3-pentanedione.

¹⁰ <http://www.cdc.gov/niosh/hhe/reports/pdfs/2008-0230-3096.pdf>

¹¹ <http://www.cdc.gov/niosh/hhe/reports/pdfs/2008-0230-3096.pdf>

¹² http://www.osha.gov/pls/oshaweb/owadisp.show_document?p_table=SPEECHES&p_id=2119

¹³ <http://www.cdc.gov/niosh/docket/archive/pdfs/NIOSH-245/DraftDiacetylCriteriaDocument081211.pdf>

As NIOSH notes, these limits are supported by validated analytical and sampling methods that can be used to effectively measure worker exposures at the selected level, and by achievable engineering controls based on “information from OSHA-sponsored site visits [Eastern Research Group 2009c] where diacetyl is used or handled.” Since, however, the analytic method capabilities may advance in the future, we recommend that NIOSH clearly state in this document, to the extent that improvements in analytic feasibility would permit, that the recommended limits for 2,3-pentanedione should be based upon data from human and animal studies and the quantitative risk assessment.

In addition, in view of new research findings, NIOSH should explain in this document if and how it could be amend the criteria document and provide new references, so stakeholders are informed of and have convenient access to all relevant documents.

Conclusion

We thank NIOSH, once again, for this opportunity to comment on behalf of our members, and all affected workers, and for producing criteria of a recommended standard for the recognition, evaluation, and control of hazards impairment from exposure to diacetyl or 2,3-pentanedione and other potentially hazardous flavoring chemicals. This criteria document is, at last, a great step by NIOSH towards fulfilling its mandate to use scientific evidence to protect American workers from debilitating lung disease.