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Prevention, Pesticides
and Toxic Substances
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July 2008

Nuosept (Cosan) 145 Summary Document: Registration Review

Nuosept (Cosan) 145 Summary Document
Registration Review: Initial Docket
July 2008

Approved By:

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Date: 7/31/08

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I. PRELIMINARY WORK PLAN – NUOSEPT (COSAN) 145

Introduction

The Food Quality Protection Act of 1996 mandated the continuous review of existing pesticides. All pesticides distributed or sold in the United States must generally be registered by EPA, based on scientific data showing that they will not cause unreasonable risks to human health, workers, or the environment when used as directed on product labeling. The new registration review program is intended to make sure that, as the ability to assess risk evolves and as policies and practices change, all registered pesticides continue to meet the statutory standard of no unreasonable adverse effects. Changes in science, public policy, and pesticide use practices will occur over time. Through the new registration review program, the Agency periodically reevaluates pesticides to make sure that as change occurs, products in the marketplace can be used safely. Information on this program is provided at: http://www.epa.gov/oppsrrd1/registration_review/.

The Agency has begun to implement the new Registration Review program pursuant to FIFRA Section 3(g) and intends to review each registered pesticide approximately every 15 years to determine whether it continues to meet the FIFRA standard for registration. The public phase of registration review begins when the initial docket is opened for each case. The docket is the Agency's opportunity to state clearly what it knows about the pesticide and what additional risk analyses and data or information it believes are needed to make a registration review decision.

Nuosept 145 was originally registered as Cosan 145, then sold and rebranded. It is a non-metallic, non-chlorinated liquid preservative used to prevent bacterial deterioration in materials such as caulks, sealants, grouts, spackling, ready-mixed wallboard compounds, resin emulsions, latex paint, and adhesives. The antimicrobial mechanism of action for Nuosept 145 is likely the release of formaldehyde. There are no direct or indirect food additive uses of Nuosept 145. In addition, all uses of Nuosept 145 are considered indoor uses that are not anticipated to result in dietary or drinking water exposure.

There is only one product containing Nuosept 145, in a 50% solution by weight. Nuosept 145 is added directly to the product in concentrations ranging from 0.05% to 0.3% by product weight, never to exceed 0.5%. It is corrosive to the skin and eyes, and moderately toxic via inhalation; therefore workers performing materials preservative duties at manufacturing plants must wear personal protective equipment (PPE) while handling this chemical. Currently goggles/face shield, protective clothing, rubber gloves, and a respirator are required.

Risk Assessment Status & Anticipated Risk Assessment Status and Data Needs

Human Health Risk Assessment Status and Anticipated Data Needs

A Reregistration Eligibility Decision (RED) document for Nuosept 145 was issued in 1994. Because of its indoor use pattern and label prohibition against food or drinking water contact, no tolerances or tolerance exemptions have been established for this chemical. Manufacturing workers are required by the product label to wear PPE while handling it; these precautions likely reduce exposure.

The Agency reviewed the hazard and exposure databases for Nuosept 145 and anticipates that additional toxicity and exposure data will be needed to complete registration review. In addition, the EPA anticipates that occupational and residential handler assessments will need to be conducted for the dermal and inhalation exposure routes for a number of use patterns as well as residential and occupational bystander post-application inhalation assessment based on uses in residential, public, institutional, and industrial sites.

Nuosept 145 is a formaldehyde releaser; formaldehyde is a probable carcinogen. Thus, the Agency anticipates that occupational and residential inhalation risks due to potential exposure to formaldehyde must be assessed. The Agency believes risk assessments are needed to ensure that the Nuosept 145 Registration Review case meets the safety standards established by FFDCA, as amended by FQPA. *Further information and detailed justifications for required studies are available in "Summary of Human Health Effects Data for the Nuosept 145 Registration Review Decision Document," dated May 19, 2008.*

Formaldehyde Non-Cancer Assessment

On June 12, 2008, members of the Antimicrobials Division's Toxicity endpoint Selection Committee (ADTC) met to discuss the non-cancer inhalation toxicity endpoint for formaldehyde that had been previously selected by the committee for use in conducting inhalation toxicity risk assessments for the formaldehyde reregistration eligibility decision (RED) document. The original endpoint of 100 ppb was selected from the published report of Horvath et al. [JAMA 259, no. 5: 701-707, 1988], who reported nasal and respiratory effects in 109 workers occupationally exposed to formaldehyde. The value of 100 ppb was selected as a NOAEL for use in occupational risk assessments, while for the general population, a value of 10 ppb was selected. This value was derived by application of a 10-fold uncertainty factor to the NOAEL value of 100 ppb to account for intraspecies variation in response in accordance with Agency policy.

During the public comment phase of the formaldehyde risk assessment, the Formaldehyde Council responded to the selection of the 100 ppb endpoint. They stated that the Agency should consider the results of a 2007 publication by Noisel et al. [Regulatory Toxicology and Pharmacology 48: 118-127), which reviewed some of the available scientific literature. This study, in the Council's opinion, "is based on human exposure rather than controlled human chamber studies and can be used for deriving a No-Observed-Adverse-Effect-Level (NOAEL) for the non-cancer endpoint for formaldehyde."

The ADTC noted both observational human exposure data as well as data compiled from exposure of human subjects under controlled conditions in the Noisel et al. publication. Notwithstanding the need for intentional exposure data to be presented to the Agency's Human Studies Review Board, the ADTC noted that irritant effects of formaldehyde have been reported in other studies below the 0.75 ppm concentration recommended by Noisel et al. as a safe level. Furthermore, this recommendation is for worker populations only.

The irritant effects of formaldehyde, including both eye and nasal irritation as well as respiratory symptoms (irritation, changes in pulmonary function), can be considered from a toxicological perspective to be composed of both physiological and adverse responses. Based on the available data, the ADTC was not compelled to select a value higher than that already proposed. With respect to the 10-fold uncertainty factor used for risk assessment to the general population, the ADTC concluded that a reduction in this factor is not warranted at this time. Contrary to the Formaldehyde Council's statement that "the nature of the health effect does not suggest that there are particularly susceptible subpopulations which would warrant application of the 10x intraspecies UF," the 1999 ATSDR Toxicological Review of formaldehyde (ATSDR, 1999) noted two studies "...providing suggestive evidence that children may be more sensitive to the irritant effects of formaldehyde." These studies were not intentional exposure studies. It is also noted in the ATSDR review that "additional research is necessary to confirm or discard the hypothesis that children may be more susceptible than adults to the irritant effects of formaldehyde..."

The ADTC concluded that, based on the available data, it is appropriate to remain with the NOAEL value selected from the 1988 Horvath et al. publication and with the 10-fold uncertainty factor for risk assessments to the general population. The ADTC is also aware, however, of ongoing efforts by ORD/NCEA to develop an inhalation reference concentration, or RfC for formaldehyde. OPP will continue to coordinate its efforts with ORD and other program offices to refine the non-cancer inhalation assessment as necessary.

Formaldehyde Cancer Assessment

The Agency is currently reevaluating the carcinogenic potential of formaldehyde. The historical and ongoing development of an inhalation unit risk value to assess the carcinogenic potential of formaldehyde is briefly summarized below. Contributors to this summary included scientists from several EPA program offices (Office of Pesticide Programs [OPP], Office of Pollution, Prevention, and Toxics [OPPT], Office of Research and Development,/National Center for Environmental Assessment [ORD/NCEA], Office of Research and Development/National Health Effects Exposure Research Laboratory [ORD/NHEERL], and Office of Air and Radiation [OAR]).

- In 1991 IRIS published a weight-of-evidence characterization for carcinogenicity of formaldehyde, classifying formaldehyde as a B1 probable human carcinogen with a potency factor of 1.3 E-5 per ($\mu g/m^3$)) on the basis of squamous cell nasal tumors observed in a two-year study in rats (Kerns et al., 1983).

- In 1999 the Chemical Industry Institute of Toxicology (CIIT) developed a health risk assessment for formaldehyde based upon the animal toxicology data (CIIT, 1999). This document presented the dose-response modeling of these data in two distinct parts: 1) based upon a biologically-based dose response (BBDR) model, and 2) benchmark dose models that were based upon point of departures at various response levels of the tumor and precursor data. Both these approaches made extensive use of the available time-to-tumor and mechanistic information. The 1999 assessment was subsequently published in various articles in peer-reviewed journals (2001, 2002, 2003, 2004).

- In 1999, the U.S. EPA's Office of Air and Radiation and Office of Research and Development, in conjunction with Health Canada, conducted an external peer review workshop for the CIIT BDDR model as well as an external written peer review and public comment period for their assessments. While the review was largely positive on the overall approach in the assessment, reviewers also pointed to the potential for significant uncertainty due to model mis-specification and uncertainties in key parameters involved in the BBDR model.

- Based on the peer review of the CIIT model, OAR determined in 2004 that the CIIT model was the most appropriate tool for risk assessment for formaldehyde. OAR has subsequently used the formaldehyde cancer potency derived using the CIIT model for a number of risk assessments involving formaldehyde emissions to the atmosphere such as the Plywood and Composite Wood Products National Emission Standard for Hazardous Air Pollutants (final rule 2004, reconsidered final rule 2006, remanded to EPA by court 2007); Control of Hazardous Air Pollutants from Mobile Sources (Final Rule 2007); and Proposed Rule for National Emission Standard for Combustion Turbines (2004). Health Canada, Australia, the World Health Organization, and the German Maximale Arbeitsplatzkonzentrationen (MAK) Commission have also used the CIIT model. Model strengths include consideration of the mode of action data for formaldehyde and a conservative approach to account for potential direct DNA interaction and mutation induction. Model uncertainties include variability for some of the parameters of the model (e.g., cell proliferation) which can affect predictions of risk (Subramanian et. al., 2007; 2008 [in press]).

- In 2004, NCEA convened a panel of experts, including scientists from CIIT, to provide advice on these and other critical biological and statistical uncertainties. The strength of the CIIT model is its consideration of mode of action and extensive mechanistic information.

- Although current OAR assessments still use the CIIT model, these assessments now acknowledge previously unknown uncertainties with the CIIT model when characterizing the risk results.

- In 2004, the International Agency for Research on Cancer (IARC) characterized formaldehyde as a human carcinogen based on their review of the current literature (IARC, 2004), including data in humans on nasopharyngeal cancer, cancer of the

nasal cavity and paranasal sinuses, and leukemia. It should be noted that some epidemiology studies did not find a reported association between formaldehyde exposure and carcinogenicity. For example, Coggon et. al., 2003 studied over 14,000 workers exposed to formaldehyde in industrial workplaces and reported no excesses of either leukemia or nasal and nasopharyngeal cancer.

- In 2005, the Scientific Review Panel (SRP) of the California Office of Environmental Health Hazard Assessment responded to the CA Air Resources Board request to reevaluate the carcinogenic potential of formaldehyde. The Panel noted in this 2005 review that California's Office of Environmental Health (OEHHA)'s November 2002 evaluation of a petition had included the 1999 report on the CIIT model and other information, and that OEHHA had concluded that "*the evidence…(1) did not change the determination that formaldehyde is a carcinogen; (2) presented information that considered the possibility of non-linear dose response relationships, but presented no clear grounds to review the original "no threshold" determination; and (3) did not provide any new epidemiology or bioassays supporting a change in potency. In addition, there was insufficient information to fully evaluate the CIIT model, issues such as model uncertainty were not adequately addressed.…*" The Scientific Review Panel's overall conclusion in 2005 was, "*The Panel concluded that there was not sufficient new data to support the petition to review the [OEHHA's earlier 1992] formaldehyde risk assessment. In addition, the newly published studies represented relevant new information, but they did not allow determination of a causal relationship between formaldehyde exposure and leukemia. These studies deserve further evaluation over time given their potential importance.*" (Froines, 2005).

- EPA is currently completing a new IRIS assessment and unit risk value for formaldehyde; the reassessment started internal peer review in May 2008 and will begin independent external peer review in January 2009 (http://cfpub.epa.gov/ncea/iristrac/index.cfm?fuseaction=viewChemical.showChemical&sw_id=1031). EPA anticipates that the peer review of the formaldehyde assessment will be a longer process then that of EPA's reregistration process scheduled to conclude in September 2008.

Based on the ongoing development of the science to predict the carcinogenic potential of formaldehyde, OPP has decided to present the formaldehyde cancer risks for the pesticidal uses using both the existing 1991 IRIS cancer unit risk of 1.3 E-5 per ($\mu g/m^3$) and the CIIT BBDR model until any new cancer estimates are fully peer reviewed. OPP also acknowledges the wide range in cancer risks using these approaches and will coordinate with other offices in EPA on the outcome of the upcoming peer review process on the carcinogenicity of formaldehyde. Because formaldehyde air concentrations approach those associated with ocular and respiratory tract irritation, the risk mitigation measures to be implemented in the meantime for the pesticidal uses will be based on mitigating the non-cancer effects at a limit of 0.01 ppm. It is believed that this level will reduce exposures sufficiently such that the cancer risks would not be of concern. The EPA process of regulating pesticides allows for reevaluation at any time if new information from the peer review process of the carcinogenic potential of formaldehyde warrants.

Dietary and Drinking Water Assessment

A dietary exposure risk assessment was not performed for Nuosept 145. There are no established tolerances or exemptions from tolerance in raw agricultural commodities or processed food and feed products under the Federal Food, Drug and Cosmetic Act (FFDCA). The product label restrictions prohibit use of Nuosept 145-treated caulks, sealants, and adhesives where they could come into contact with food. All registered use sites are indoor manufacturing plants. As a result, dietary exposure via drinking water would only be possible in the event a discharge from a manufacturing facility occurs and if Nuosept 145 passes through wastewater treatment facilities and into drinking water. Thus, the Agency has determined that it is not necessary to conduct a dietary risk assessment at this time.

The potential for Nuosept 145 to contaminate drinking water is considered to be very low, since all registered use patterns are for indoor uses. The Agency does not currently plan to conduct a drinking water assessment for Nuosept 145; however, if the new data received by the Agency indicates potential drinking water concerns, an assessment will be conducted.

Occupational and Residential Assessment

Qualitative occupational and residential assessments were conducted for Nuosept 145 in association with the 1994 RED. The Agency must conduct quantitative risk assessments to ensure that Nuosept 145 meets the safety standards established by FFDCA, as amended by FQPA.

The Agency expects that occupational handlers would likely be exposed through the dermal and inhalation routes in manufacturing settings for all material preservative uses (e.g., caulks, paints, and adhesives). Currently occupational handlers are required by the label to wear personal protective equipment (PPE) in the presence of this chemical. As Nuosept 145 is a severe dermal, eye, and inhalation irritant, the label directs that goggles or face shield, protective clothing, rubber gloves, and a respirator should be worn. However, data are needed to determine the potential postapplication air concentrations of Nuosept 145 and formaldehyde that may result from use of preserved materials in manufacturing settings.

In addition, non-occupational exposure is anticipated from adults applying preserved caulks, paints, etc. However, postapplication exposures may occur for adults and children to Nuosept 145 and formaldehyde following use of preserved materials in the home and public places. Data are needed to determine the potential postapplication air concentrations of Nuosept 145 and formaldehyde that may result from use of preserved materials in the home and public and commercial establishments.

The Agency has reviewed the hazard and exposure databases for Nuosept 145 and has concluded that the following additional toxicity study is needed to complete registration review:

- (GLN 870.3465) 90-Day Inhalation Toxicity

In addition, certain nondietary exposure studies are needed to permit assessment of several residential and occupational postapplication/bystander scenarios:

- (GLN 875.1200) Dermal Indoor Exposure
- (GLN 875.1400) Inhalation Indoor Exposure
- (GLN 875.1600) Data Reporting and Calculations
- (GLN 875.1700) Product Use Information
- (GLN 875.2500) Postapplication Inhalation Exposure
- (GLN 875.2800) Description of Human Activity

Anticipated Physical/ Chemical Property Data Needs

All product chemistry data requirements have been fulfilled for Nuosept 145; no additional data are needed at this time. *Further information is available in "Summary of Product Chemistry, Environmental Fate, and Ecotoxicity Data for the Nuosept 145 Registration Review Summary Document", dated May 12, 2008.*

Anticipated Environmental Fate and Ecological Risk Assessment Data Needs

The planned ecological risk assessment will allow the Agency to determine if use patterns will result in a "no effect" or "may affect" determination for federally listed threatened or endangered species (listed species), or their designated critical habitat. If the ecological risk assessment indicates that Nuosept 145 "may affect" a listed species or its designated critical habitat, the assessment will be refined. The refined risk assessment will allow the Agency to determine whether use of Nuosept 145 is "likely" or "not likely to adversely affect" the species or critical habitat. When an assessment concludes "likely to adversely affect", further refinements to the risk assessment or regulatory options may be pursued prior to a "may affect" consultation with the U.S. Fish and Wildlife Service and/or National Marine Fisheries Service (Services), as appropriate.

Due to the indoor use patterns, the Agency did not conduct an environmental fate assessment or ecological risk assessment for Nuosept 145 when it was registered. However, three ecological studies on avian, invertebrates, and aquatic species were reviewed for the RED. The studies indicated that Nuosept 145 was practically non-toxic to slightly toxic to the tested species. Therefore, the ecological risk was determined to be low. The results of the ecotoxicity studies are summarized in Table 1 below.

Table 1. Ecotoxicity Data Summary

Test Species	LC_{50} (ppm)	Conclusion
Bobwhite Quail (*Colinus virginianus*)	>5620	Practically Nontoxic
Daphnid (*Daphnia magna*)	98	Slightly Toxic

Rainbow Trout (*Salmo gairdneri*)	280	Practically Nontoxic

The planned ecological risk assessment will allow the Agency to determine if use patterns will result in a "no effect" or "may affect" determination for federally listed threatened or endangered species (listed species), or their designated critical habitat. If the ecological risk assessment indicates that Nuosept 145 "may affect" a listed species or its designated critical habitat, the assessment will be refined. The refined risk assessment will allow the Agency to determine whether use of Nuosept 145 is "likely" or "not likely to adversely affect" the species or critical habitat. When an assessment concludes "likely to adversely affect" further refinements to the risk assessment or regulatory options may be pursued prior to a "may affect" consultation with the U.S. Fish and Wildlife Service and/or National Marine Fisheries Service (Services), as appropriate.

The Agency anticipates conducting both assessments for material preservatives that potentially pass through wastewater treatment plants (WWTPs) and may be discharged into terrestrial and aquatic environments. For a complete environmental fate assessment, the Agency anticipates needing the following data:

- (GLN 850.6800) modified activated sludge respiration inhibition;
- (GLN 835.1110) activated sludge sorption isotherm; and
- (GLN 835.3110) ready biodegradability.

Additionally, the Agency anticipates needing the following data in order to conduct a complete ecological risk assessment, including an endangered species assessment for all uses:

- (GLNs 850.4400 & 850.5400) algal toxicity (Tier II) using freshwater green alga, *Selenastrum capricornutum.*

Further information and detailed justifications for required studies are available in "Summary of Product Chemistry, Environmental Fate, and Ecotoxicity Data for the Nuosept 145 Registration Review Summary Document," dated May 12, 2008.

Incidents:

No incidents related to Nuosept 145 uses were found during a search of the following databases: the OPP Incident Data System (IDS); Poison Control Center data; California Department of Pesticide Regulation data; and National Pesticide Information Center data.

Timeline:

EPA has created the following estimated timeline for the completion of the Nuosept 145 registration review.

Activities	Estimated Month/Year
Phase 1: Opening the docket	
Open Public Comment Period for Nuosept 145 Docket	July 2008
Close Public Comment Period	October 2008
Phase 2: Case Development	
Develop Final Work Plan (FWP)	December 2008
Issue DCI	October 2009
Data Submission	October 2011
Open Public Comment Period for Preliminary Risk Assessments	April 2012
Close Public Comment Period	July 2012
Phase 3: Registration Review Decision	
Open Public Comment Period for Proposed Reg. Review Decision	October 2012
Close Public Comment Period	January 2013
Final Decision and Begin Post-Decision Follow-up	2013
Total (years)	5 years

Guidance for Commenters:

The public is invited to comment on EPA's preliminary registration review work-plan and rationale. The Agency will consider all comments as well as any additional information or data provided in a timely manner prior to issuing a final work plan for the Nuosept 145 case.

Stakeholders are also specifically asked to provide available information and data in the following areas:

1. Confirmation on the following label information:
    a. Sites of application
    b. Formulations
    c. Application methods and equipment
    d. Maximum application rates
    e. Frequency of application, application intervals and maximum number of applications
    f. Geographic limitations on use
2. Use or potential use distribution
3. Use history
4. Usage/use information for non-agricultural uses (e.g., materials preservation)
5. Typical application interval
6. State or local use restrictions
7. Ecological incidents (non-target plant damage and avian, fish, reptilian, amphibian and mammalian mortalities) not already reported to the Agency
8. Monitoring data

9. Structure Activity Relationships

Environmental Justice

EPA seeks to achieve environmental justice, the fair treatment and meaningful involvement of all people, regardless of race, color, national origin, or income, in the development, implementation, and enforcement of environmental laws, regulations, and policies. To help address potential environmental justice issues, the Agency seeks information on any groups or segments of the population who, as a result of their location, cultural practices, or other factors, may have atypical, unusually high exposure to Nuosept 145, compared to the general population. Please comment if you are aware of any sub-populations that may have atypical, unusually high exposure compared to the general population.

Water Quality

Nuosept 145 is not identified as a cause of impairment for any water-bodies listed as impaired under section 303(d) of the Clean Water Act, based on information provided at: http://oaspub.epa.gov/tmdl/waters_list.impairments?p_impid=3. The Agency invites submission of water quality data for these chemicals. To the extent possible, data should conform to the quality standards in Appendix A of the "OPP Standard Operating Procedure: Inclusion of Impaired Water Body and Other Water Quality Data in OPP's Registration Review Risk Assessment and Management Process," (http://www.epa.gov/oppsrrd1/registration_review/water_quality_sop.htm), in order to ensure they can be used quantitatively or qualitatively in pesticide risk assessments.

Trade Irritants

Through the registration review process, the Agency intends to solicit information on trade irritants and, to the extent feasible, take steps toward facilitating irritant resolution. Growers and other stakeholders are asked to comment on any trade irritant issues resulting from lack of Maximum Residue Limits (MRLs) or disparities between U.S. tolerances and MRLs in key export markets, providing as much specificity as possible regarding the nature of the concern. In the case of Nuosept 145, there are currently no residue tolerances established for Nuosept 145. There are no direct or indirect food uses, all labels specify that the product must not be used in any connection with feed, food, or drinking water uses. Additionally, there are no MRLs established for Nuosept 145. Therefore, the Agency does not anticipate current uses of Nuosept 145 posing concerns as a trade irritant.

Structure Activity Relationships

EPA must rely upon information of appropriate quality and reliability for each decision made by the Agency. In the Office of Pesticide Programs (OPP), the evaluation process for a pesticide chemical traditionally begins with the applicant's submission of a set of studies conducted with the specific pesticide chemical of interest. The use of the results of such testing (measured data) is a logical, scientifically rigorous process that identifies the

physical, chemical, and environmental fate properties of the pesticide, as well as the dose and endpoints at which an adverse effect can occur in various animal species.

Today, there is significant interest in alternative techniques, i.e., techniques other than data generation that could significantly inform the Agency's decision-making process. Recently, OPP has made increasing use of structure activity relationship (SAR) as part of its regulatory decision-making process. In the SAR process, a chemical's molecular structure is compared to that of other chemicals for which data are available. These structural similarities are then used to make predictive judgments about a chemical's physical, chemical, and biological properties. Thus, the chemical's physical, chemical, and biological properties are a function of (or directly related to) the chemical's molecular structure. Quantitative SAR is referred to as QSAR. To develop a QSAR, a selected set of measured data on a single physical, chemical, or biological property is used to derive a model (an equation) to predict the value of that property.

Since SAR assessments and QSAR modeling are another set of tools that are available to Agency scientists, OPP has begun a process shift that envisions shifting from the current study-by-study approach to an approach in which the use of predicted data, generated using validated models, is considered along with information from open literature and studies specifically generated under Part 161 requirements. All relevant information would be considered as part of a weight-of-the-evidence evaluation.

At this time, EPA believes that for certain endpoints, especially physical/chemical and fate properties, that SAR and QSAR might be effectively utilized to fulfill these data requirements for many antimicrobial pesticide chemicals. When considering biological properties, at this time, EPA believes that SAR and QSAR can be most effectively utilized in the evaluation of chemicals that exhibit lower toxicity for human health and/or ecotoxicity parameters. This is appropriate because the risk assessment for lower toxicity chemicals can be stream-lined, i.e., a screening-level assessment procedure rather than multiple tiers of assessments with progressively more data requirements.

If stakeholders believe that submission of predicted data can fulfill one of the data needs for Nuosept 145, then the Agency invites submission of this information. The submitter would be expected to supply a rationale describing the utility of the information and provide documentation on the scientific validity of the information. The determination that the predicted data fulfills the data requirement would be at the sole discretion of the Agency. Pre-submission consultation with the Agency is encouraged.

Next Steps:

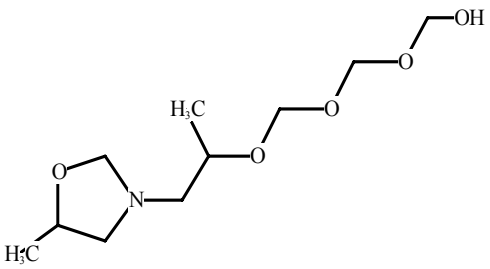
After the 90-day public comment period closes, the Agency will prepare a Final Work Plan for this pesticide.

II. FACT SHEET

Background Information

- Registration review case number: 3052
- PC Code: 123702
- CAS#: 97553-90-7
- Technical registrant: International Specialty Products
- First approved for use in a registered product: September 1983
- Reregistration Eligibility Decision (RED) document issued in September 1994. Nuosept 145 was conditionally reregistered March 6, 1995
- Antimicrobials Division Chemical Review Manager (CRM): Eliza Blair, blair.eliza@epa.gov

Chemical Structure:



Use & Usage Information

- Nuosept 145 is an antimicrobial pesticide used as a preservative in materials such as caulks, sealants, grouts, spackling, ready-mixed wallboard compounds, resin emulsions, latex paint, and adhesives.
- Nuosept 145 is registered as a non-food use chemical.
- There is one registered product containing Nuosept 145 as an active ingredient, formulated as a liquid.
- Pests controlled are deterioration/spoilage bacteria.
- Per the label, the application rate for registration #1529-33 ranges from 0.05% to 0.3% by weight in the final formulation, but should not exceed 0.5% in the final product for any application.

Recent Regulatory Actions

There have been no recent significant regulatory activities regarding the sole registered Nuosept 145 product (i.e. tolerance related actions, changes of use patterns, or submission of toxicology studies). However, a Reregistration Eligibility Decision document was issued in 1994.

Human Health Risk Assessment Status

At the present time, the Agency has evaluated the potential human health risks for Nuosept 145 and concluded that additional exposure data are needed to characterize potential exposures to human health from the registered uses of Nuosept 145. In addition, there is a need to conduct additional exposure and/or risk assessment for Nuosept 145 uses. *Further information and detailed justifications for required studies are available in "Summary of Human Health Effects Data for the Nuosept 145 Registration Review Decision Document", dated May 19, 2008.*

Environmental Fate & Ecological Risk Assessment Status

The Agency anticipates conducting environmental fate and ecological risk assessments for the materials preservative uses of Nuosept 145. These uses may result in releases that potentially pass through waste water treatment plants (WWTPs) and may be discharged into terrestrial and aquatic environments. Additional data are needed to conduct this assessment.

The planned ecological risk assessment will allow the Agency to determine if use patterns will result in a "no effect" or "may affect" determination for federally listed threatened or endangered species (listed species), or their designated critical habitats. *Further information and detailed justifications for required studies are available in "Summary of Product Chemistry, Environmental Fate, and Ecotoxicity Data for the Nuosept 145 Registration Review Summary Document", dated May 12, 2008.*

Tolerances

There are no direct food or feed uses of Nuosept 145; therefore, EPA has not established tolerances or exemptions from tolerances in raw agricultural commodities or processed food and feed products under the Federal Food, Drug and Cosmetic Act (FFDCA).

Data Call-In Status

A PDCI (product-specific data call-in) was issued for Nuosept 145 in November 1994. The Agency anticipates issuing a further data call-in for Nuosept 145 during Registration Review.

Labels

There is one registered product for the active ingredient Nuosept 145. The EPA Registration Number is provided in the table below. Product registration labels may be obtained from the Pesticide Product Label System (PPLS) website at: http://oaspub.epa.gov/pestlabl/ppls.home.

EPA Reg. No.	Product Name	Formulation Type	Percent Active Ingredient	Registrant
1529-33	Nuosept 145 LP Preservative	RTU liquid	50	International Specialty Products

Incidents

No incidents related to Nuosept 145 use were found during a search of the OPP Incident Data System (IDS).

III. GLOSSARY of TERMS & ABBREVIATIONS

ai	Active Ingredient
AR	Anticipated Residue
ASTM	American Society for Testing and Materials
AWPA	American Wood Preserver's Association
CFR	Code of Federal Regulations
cPAD	Chronic Population Adjusted Dose
CSF	Confidential Statement of Formula
CSFII	USDA Continuing Surveys for Food Intake by Individuals
DCI	Data Call-In
DEEM	Dietary Exposure Evaluation Model
DFR	Dislodgeable Foliar Residue
DNT	Developmental Neurotoxicity
DWLOC	Drinking Water Level of Comparison
EC	Emulsifiable Concentrate Formulation
EDWC	Estimated Drinking Water Concentration
EEC	Estimated Environmental Concentration
EPA	Environmental Protection Agency
EUP	End-Use Product
FDA	Food and Drug Administration
FIFRA	Federal Insecticide, Fungicide, and Rodenticide Act
FFDCA	Federal Food, Drug, and Cosmetic Act
FQPA	Food Quality Protection Act
FOB	Functional Observation Battery
GENEEC	Tier I Surface Water Computer Model
IR	Index Reservoir
LC_{50}	Median Lethal Concentration. A statistically derived concentration of a substance that can be expected to cause death in 50% of test animals. It is usually expressed as the weight of substance per weight or volume of water, air or feed, e.g., mg/l, mg/kg or ppm.
LD_{50}	Median Lethal Dose. A statistically derived single dose that can be expected to cause death in 50% of the test animals when administered by the route indicated (oral, dermal, inhalation). It is expressed as a weight of substance per unit weight of animal, e.g., mg/kg.
LOC	Level of Concern
LOAEL	Lowest Observed Adverse Effect Level
µg/g	Micrograms Per Gram
µg/L	Micrograms Per Liter
mg/kg/day	Milligram Per Kilogram Per Day
mg/L	Milligrams Per Liter
MOE	Margin of Exposure
MRID	Master Record Identification (number). EPA's system of recording and tracking submitted studies.
MUP	Manufacturing-Use Product
NA	Not Applicable
NAWQA	USGS National Ambient Water Quality Assessment
NPDES	National Pollutant Discharge Elimination System
NR	Not Required
NOAEL	No Observed Adverse Effect Level
OPP	EPA Office of Pesticide Programs
OPPTS	EPA Office of Prevention, Pesticides and Toxic Substances
PAD	Population Adjusted Dose
PAIRA	Pure Active Ingredient Radiolabelled
PCA	Percent Crop Area
PDP	USDA Pesticide Data Program

PHED	Pesticide Handler's Exposure Data
PHI	Preharvest Interval
ppb	Parts Per Billion
PPE	Personal Protective Equipment
ppm	Parts Per Million
PRZM/EXAMS	Tier II Surface Water Computer Model
Q_1*	The Carcinogenic Potential of a Compound, Quantified by the EPA's Cancer Risk Model
RAC	Raw Agriculture Commodity
RED	Reregistration Eligibility Decision
REI	Restricted Entry Interval
RfD	Reference Dose
RQ	Risk Quotient
SCI-GROW	Tier I Ground Water Computer Model
SAP	Science Advisory Panel
SF	Safety Factor
SLN	Special Local Need (Registrations Under Section 24©) of FIFRA)
TGAI	Technical Grade Active Ingredient
TEP	Typical End-Use Product
USDA	United States Department of Agriculture
UF	Uncertainty Factor
WPS	Worker Protection Standard

IV. Appendix A

Use Site	Formulation	Method of Application	Application Rate/ No. of applications	Use Limitations
Materials preservative				
Adhesives Caulks, grouts, spackling Sealants Wallboard compounds Resin emulsions Latex paint Dispersed colors, pigment slurries Ready mix joint cement	Ready to use Reg 1529-33	Incorporation	Typical use levels range from 0.05% to 0.3% by weight in the final formulation, but should not exceed 0.5% of the final product for any application.	After biocide addition, this product should not be subjected to excessively high temperatures (175° F maximum).