National Organic Standards Board
Materials Subcommittee Petitioned Material Discussion Document
Distilled Tall Oil
February 8, 2022

Relevant Background on the Distilled Tall Oil Petition

A petitioner has submitted documentation (August 24, 2020; May 13, 2021; November 22, 2021) to the National Organic Program (NOP) requesting the use of distilled tall oil (DTO) at 7 CFR §205.601(m) and 7 CFR §205.603(e) as a synthetic substance permitted in organic agriculture. Per the petition, the intended use of DTO – a viscous yellow to amber-brown liquid insoluble in water -- in organic crop and livestock production is as an inert ingredient and as an adjuvant for use as a solvent, sticker, anti-leaching agent, and time-release agent in pesticides. The petitioner asserts that DTO offers a range of benefits to organic production, including but not limited to improved performance, employee and environmental health and safety, and reduced re-treatment intervals.

A previous petition submitted in 2008 was denied by the National Organic Standards Board (NOSB) in October 2010. The principal focus of the technical report on that petition and the NOSB's subsequent review appears to have been on crude tall oil (CTO) and DTO as being structurally and functionally one in the same. The current petitioner has sought to draw an essential distinction between the two substances in how they are constituted, applied, and ultimately incorporated by and into the environment.

Another important issue to consider with this petition is that the intended use of DTO is as an inert or adjuvant ingredient, not an active ingredient and specifically not an active insecticide/pesticide. The petitioned use as an inert ingredient is to augment the functionality and sequestration of other approved substances in organic crop and livestock production. Both the prior technical report and NOSB review and the current technical report have dedicated significant analysis on the substance as an *active* ingredient, which may not be appropriate for this petition. This petition coincides with the NOP's review of EPA List 3 and List 4 inerts.

Given its application to both crop production and livestock production, the petition was assigned to the NOSB's Materials Subcommittee for review and over the course of the Subcommittee's review, questions have emerged for which a broader discussion with stakeholders is sought.

Distinction between Distilled Tall Oil and Crude Tall Oil

The Materials Subcommittee found the petition sufficient for evaluation and requested an updated technical report, specifically seeking differentiation between CTO and DTO. Neither CTO nor DTO have a history of use in organic but have long been used in conventional agriculture. Neither substance appears on any international lists of substances permitted in organic.

Both CTO and DTO are derived from Kraft pulping – in alkaline conditions -- of coniferous trees and are comprised of fatty acids, rosin acids, and – most minimally -- neutrals [or unsaponifiable (non-soaping) compounds]. While the two substances are identified by a common Chemical Abstracts Service (CAS) number, they are differentiated by the degree to which each final substance is refined or purified. In DTO, the final substance is purified to the extent of having reduced rosin acids and neutrals compared to

CTO. This results in a final substance with a higher percentage of fatty acids. The technical report also provided references indicating that CTO and DTO may differ in the species of conifer from which they are sourced and the context within which pulping of the source material occurs in order to derive the black liquor that becomes the key feedstock for both substances. One cited source from 1992 suggested that the majority of all tall oil in the United States is distilled, not crude.

DTO is made when tall oil soap is isolated from the black liquor that results from pulping. When combined with sulfuric acid, the tall oil soap forms CTO. When it is further refined, it becomes DTO.

Inert versus Active

Since the petition only contemplates the use of DTO as an inert or adjuvant ingredient in pesticide application, this review is limited in its scope to the appropriateness of the substance as petitioned, not as an active pesticide ingredient. It should be noted that this is the first time since February 2011 that a petition has been brought before the NOSB for a substance that the petitioner considers an inert.

While DTO can be an active pesticide (whereby soft-bodied insects are suffocated upon contact with the substance), it is petitioned here as an inert or adjuvant (auxiliary) substance needed to dissolve active ingredients. That said, the technical report asserts that “inert” by no means implies “nontoxicity” or that it does not have insecticidal functionality. These considerations may be a function of the way that EPA classifies and manages inerts. It is important to note that DTO does appear on the EPA’s List 3, inerts of unknown toxicity. Tall oil (broadly) appears on EPA List 3, inerts of unknown toxicity, but does not – nor does DTO -- appear on List 4, inert ingredients of minimal risk. The implications for these listings are relevant to the NOSB’s continued vigilance on the issue of inerts and the reliance on obsolete lists under the jurisdiction of other agencies. The use of List 3 materials in organic production is annotated to limit their use to "use only in passive pheromone dispensers.” Until the references to List 3 and 4 materials is changed, those lists define the way that inert materials are reviewed. However, this petition asks that DTO be reviewed independently from its listing on List 3 and be specifically placed on the National List as an allowed synthetic for organic production. When used as an inert, DTO would be combined with active ingredients in pesticides.

While the technical report suggests that the inert use of DTO still manifests insecticidal results (which should be a significant consideration relative to its use in organic production), the petitioner has since responded that the use of the substance as an inert is intended to produce the effects of an insecticide. The petitioner has submitted additional information since the drafting of this discussion document, and it should be available in the public comment docket on Regulations.gov prior to the Spring 2022 meeting That said, application rates for the substance as outlined in the petition more closely suggest active function than the rates that would be expected of an inert. The Subcommittee has discussed the challenges of effectively reviewing this substance as an inert when application rates more clearly resemble those of active-functioning ingredients and is looking at this discussion document as an opportunity for discovery to receive information from stakeholders on the science of inert evaluation.

The technical report articulates alternatives to DTO that may not be relevant to this petition, as they seem to be alternatives to its active (not inert) use, i.e., nets and other physical barriers to reduce pest impacts as well as mechanical removal of insects. Presumably DTO as an inert would simply be augmenting the time-release and related functionality of allowed substances and products. The technical report also alludes to weed removal, seasonal cropping, and crop rotations as means of avoiding DTO’s application as an active pesticide ingredient (i.e., insect suffocant).

Further, the Materials Subcommittee acknowledges that the NOP has an Advance Notice of Proposed Rulemaking (ANPR) in process, in an attempt to address the obsolete EPA List 3 and EPA List 4 references in the organic regulations.. The ANPR is happening concurrently with this petition and could establish precedent for how the National List addresses inerts moving forward.

Other Considerations

The insolubility of DTO in water – its inherent hydrophobia – appears to decrease the solubility of the pesticides of which it is a part and helps to prevent both leaching of pesticides into groundwater and leaching of micronutrients from topsoil. This sequestration role of DTO appears to be one of its main functional benefits.

Although perhaps not relevant to this petition, DTO appears in a number of food packaging applications and is generally regarded as safe (GRAS) by the Food and Drug Administration.

Questions to our Stakeholders

1. Does distilled tall oil as an inert ingredient provide functionality that could be beneficial to organic producers? Could that vary between usage in crop production versus livestock production?

2. As the petitioner suggests, are there no other, or few other, time-release agents available for use in organic production?

3. The regulation wherein the EPA classifies DTO as a List 3 inert is obsolete; however, according to the technical report, the rate of application for the substance as outlined in the petition could function more like an active pesticide, not an inert or adjuvant. Does the projected rate of application contribute to the substance functioning as an inert or active ingredient? Should the NOSB develop an annotation limiting the application rate of inerts and adjuvants so as to ensure they function as such and not as an active ingredients or pesticides?

4. Can DTO as an inert function as an active insecticide, making it fall outside the scope of this petition?

Subcommittee Vote:
Motion to accept the discussion document on Distilled Tall Oil
Motion by: Wood Turner
Seconded by: Mindee Jeffery
Yes: 6 No: 0 Abstain: 0 Absent: 0 Recuse: 0

Approved by Wood Turner, Materials Subcommittee Chair, to transmit to NOSB, February 11, 2022