Alaska Community Action on Toxics * Center for Biological Diversity * Center for Environmental Health * Defenders of Wildlife * Pesticide Action Network North America * Sierra Club

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RE: EPA-HQ-OPP-2009-0298

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Dear Sir:

This letter is a submission to the docket regarding Dow AgroSciences' application for an experimental use permit under the Federal Insecticide, Fungicide, and Rodenticide Act ('FIFRA') for testing of sulfuryl fluoride as a soil fumigant, EPA-HQ-OPP-2009-0298. 74 Fed. Reg. 27,533 (June 10, 2009); *see also* 7 U.S.C. § 136c.

We oppose issuing this permit. Sulfuryl fluoride is 4,780 times as potent a greenhouse gas as carbon dioxide over a 100 year time horizon,[1] and EPA must

[1] Papadimitriou, V.C., R.W. Portmann, D.W. Fahey, J. Mühle, R.F. Weiss, and J.B. Burkholder, *Experimental and Theoretical Study of the Atmospheric Chemistry and Global Warming Potential of SO_2F_2*, Journal of Physical Chemistry A, 112 (49), 12657-12666, doi:10.1021/jp806368u, 2008 (Ex. 1). *See also* Figure 3 in Sulbaek Andersen, M.P., D.R. Blake, F.S. Rowland, M.D. Hurley, and T.J. Wallington, *Atmospheric Chemistry of Sulfuryl Fluoride: Reaction with OH Radicals, Cl Atoms and O_3, Atmospheric Lifetime*, IR Spectrum, and Global Warming Potential Environ. Sci. Technol. , 2009, 43,:1067–1070 (Ex. 2); J. Mühle et al., *Sulfuryl fluoride in the global atmosphere*, Journal of

therefore consider climate change in this decision. And, independent of its climate impacts, sulfuryl fluoride is highly toxic. Controlling regulations bar issuing a permit that is "not justified," or that "would cause unreasonable adverse impacts on the environment." 40 C.F.R. § 172.10(a). Allowing this dangerous pollutant to be applied to farm fields across the country is unjustifiable and would cause significant environmental damage. We therefore urge EPA to deny this proposed permit. The agency also must, at a minimum, appropriately analyze the proposed permit's impacts.

I. Sulfuryl Fluoride and Climate Change

The EPA itself has concluded, based upon the work of hundreds of scientists, that the "effects of climate change on public health include sickness and death," and that global warming threatens "virtually every facet of the living world around us." *See* 74 Fed. Reg. 18,886, 18,904 (Apr. 24, 2009).[2] The U.S. Global Change Research Program has recently documented the damage global warming has done, and will do, in the United States, observing that "[c]limate change will combine with pollution . . . to create larger impacts than from . . . these factors alone."[3] And a commission led by the respected British medical journal *The Lancet* and University College London concluded that "[c]limate change is the biggest global health threat of the 21st century."[4] Simply put, EPA cannot fulfill its legal duties to consider the "impacts on the environment" caused by this permit, *see, e.g.*, 40 C.F.R. § 172.10(a), without considering its contributions to this global crisis.

When addressing the climate impacts of sulfuryl fluoride, EPA must acknowledge the fact that climate change is perhaps the best (and worst) example of a cumulative effects problem; emissions from numerous sources have combined to create the most pressing environmental and societal problem of our time. *Center for Biological Diversity v. NHTSA*, 538 F.3d 1172, 1218 (9th Cir. 2008) ("the impact of greenhouse gas emissions on climate change is precisely the kind of cumulative impacts analysis that NEPA requires agencies to conduct."). And while a particular project's greenhouse gas emissions may represent a fraction of total emissions, courts have

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Geophysical Research, 114, D05306, doi: 10.1029/2008JD011162 (Ex 3); D. Chandler, "New greenhouse gas identified; Early detection may enable 'nipping it in the bud' before its production increases," *MIT Tech Talk* (Mar. 11, 2009) (Ex 4).

[2] *See* also U.S. Environmental Protection Agency, Climate Change Division, Office of Atmospheric Programs, *Technical Support Document for Endangerment and Cause or Contribute Findings for Greenhouse Gases under Section 202(a) of the Clean Air Act*, at ES-1, 3-4 (April 17, 2009), *available at* http://epa.gov/climatechange/endangerment/downloads/TSD_Endangerment.pdf (Ex 5)

[3] T. Karl et al. (eds), U.S. Global Change Research Program, *Global Climate Change Impacts in the United States* (2009) (Ex 6)

[4] Anthony Costello et al., The Lancet Commissions, *Managing the health effects of climate change*, 373 The Lancet 1693, 1693 (May 16, 2009) (Ex 7).

flatly rejected the notion that the incremental impact of a project is not cumulatively considerable just because it is so small that it would make only a de minimis contribution to the problem as a whole. As noted by former D.C. Circuit Judge Wald in a 1990 dissenting opinion, recently quoted with unanimous approval by the Ninth Circuit in *Center for Biological Diversity v. NHTSA*:

> [W]e cannot afford to ignore even modest contributions to global warming. If global warming is the result of the cumulative contributions of myriad sources, any one modest in itself, is there not a danger of losing the forest by closing our eyes to the felling of the individual trees?

538 F.3d at 1217,

Moreover, "the fact that 'climate change is largely a global phenomenon that includes actions that are outside of [the agency's] control . . . does not release the agency from the duty of assessing the effects of its actions on global warming within the context of other actions that also affect global warming.'" *Id.* at 1217 (citation omitted).

Because sulfuryl fluoride is such a potent greenhouse gas, seemingly small emissions can make a significant contribution to climate change. Dow is requesting permissions to release 32,435 pounds of sulfuryl fluoride to fumigate 65 acres of test plots in Florida, Georgia, Texas and California. *See* 74 Fed. Reg. at 27,535. Even if only 10% of this escapes from the soil into the air, that is equivalent to 15,500,000 pounds of carbon dioxide.[5,6]

To put that figure into perspective, a car that gets 30 miles per gallon would have to be driven 23,300,000[7,8] miles – the distance of a trip circling the world over 930 times – to produce that much carbon dioxide.

Adding to these emissions, is that, in practice, approved fumigants are used in total at a rate well over 100 million pounds per year in the U.S. If testing eventually leads to approval, we can expect millions or tens of millions of pounds of sulfuryl fluoride to be used each year. EPA must consider the likely impacts of this broader use, which is a potential ultimate consequence of granting the experimental use permit.

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[5] Papadimitriou et al., *supra* n. 1, at 12657-12666.

[6] 10% of 32,435 pounds x 4780 = 15,503,930 pounds, rounded to 15,500,000 pounds.

[7] Each gallon of gas used produces 20 pounds of carbon dioxide, http://www.fueleconomy.gov/Feg/co2.shtml.

[8] (15,503,930 pounds / (20 pounds / gallon)) x (30 miles/gallon) = 23,255,895 miles, rounded to 23,300,000 miles. The Earth is 24,901 miles around at the equator.

If sulfuryl fluoride is approved and used widely, and even if only 1 million pounds escapes into the atmosphere each year, the escaped gas's global warming impacts will be equivalent to 4.8 billion pounds of carbon dioxide[9] – the equivalent of driving over 7 *billion* miles each year.[10] That drive would go from Earth to Pluto and back.

EPA cannot ignore these risks. Instead, it should deny this permit, thereby preventing the market growth of a potentially major new driver of global warming and avoiding the impacts of this initial substantial release. The Supreme Court has emphasized the importance of "whittl[ing] away" at the global warming challenge from many different angles, *see Massachusetts v. EPA*, 549 U.S. 497, 524 (2007); EPA should seize the opportunity to do so here.

II. Sulfuryl Fluoride's Toxic Risks

Sulfuryl fluoride is not just a greenhouse gas. It is also highly toxic, and so poses significant human health and ecological risks.

At the time of the 1993 reregistration eligibility decision ('RED'),[11] sulfuryl fluoride's "use profile" was as "an insecticide used to fumigate closed structures." Because sulfuryl fluoride was limited to these "highly specialized uses, and due to its chemical properties," EPA did not require "the usual supporting environmental fate data for reregistration." The RED continues, saying, "therefore, wildlife toxicity data were not required for reregistration, and an ecological risk assessment was not conducted." In other words, the studies to assess risks of the proposed agricultural use, which involves injection into the soil, have not been performed. An obvious route of wildlife endangerment in the proposed agricultural use is where birds and other wildlife enter the fumigated field, and encounter potentially lethal concentrations of fumigant gas.

It is also important to compare the quantities used in the residential use against the proposed agricultural use. Use in a three thousand square foot house with 10-foot ceilings at an application rate of 1 pound per 1000 cubic feet, would only involve on the order of 30 pounds of the product. Compare this with an application to a 40 acre field at 500 pounds per acre which would involve 20,000 pounds of the product. In

[9] 1 million pounds x 4780 = 4.78 billion pounds, rounded to 4.8 billion pounds.

[10] (4.78 billion pounds/20 pounds/gallon)) x(30 miles/gallon)=7.17 billion miles, rounded to 7 billion. Pluto is roughly 3.5 billion miles from Earth.

[11] Reregistration Eligibility Decision, Sulfuryl Fluoride, U.S. EPA, Sep. 1993, http://www.epa.gov/oppsrrd1/REDs/old_reds/sulfuryl_fluoride.pdf (Ex 8); *cf.* C. Cox, *.Fumigant Factsheet: Sulfuryl Fluoride*, 17 J. of Pesticide Reform 17 (1997) (detailing some of the risks of sulfuryl fluoride) (Ex 9).

short, agricultural fumigation results in releases into the environment of amounts that will typically be two to three orders of magnitude larger than residential uses.

Finally, soil fumigants are known to create toxic conditions beyond the boundaries of the fumigated fields. Because of this, in its May, 2009 "fumigant cluster assessment" reregistration eligibility decisions, which apply to methyl bromide, the methyl-isothiocyanate-generating fumigants, and chloropicrin, the EPA is requiring buffer zones around fumigated fields frequently measuring hundreds of feet.[12] In addition to these buffer zones, EPA is requiring minimum distances between buffer zones and difficult-to-evacuate sites, such as schools, nursing homes and hospitals of 1/8 to 1/4 mile. The chosen distances reflect the results atmospheric modeling, physical measurements and poisoning incident reports. Sulfuryl fluoride can be expected to have similar off-site effects.

Therefore, the proposed new use of sulfuryl fluoride requires human health and environmental risk assessments appropriate to address the new use sites, the new application method, the high application rates, and the propensity to drift and create hazardous conditions up to 1/4 mile away.

III. Properly Accounting for Potential Impacts

At an absolute minimum, EPA must properly consider the impacts of this dangerous proposal by conducting required analyses under the National Environmental Policy Act ('NEPA') and the Endangered Species Act ('ESA').

To "protect public health and the environment," [13] *see* 40 C.F.R. § 172.5(c), EPA must conduct a thorough NEPA analysis. This is especially so given the length of the project (3 years), amount of use (total of 32,500 lbs of product or 32,435 lbs of active ingredient is proposed to be used on a total acreage of 65 acres which is 500 pounds of product per acre), and the extent of use (4 states).

NEPA is our "basic national charter for the protection of the environment." 40 C.F.R. § 1500.1. NEPA's fundamental purposes are to guarantee that: (1) agencies take a "hard look" at the environmental impacts of their actions by ensuring that they "will have available, and will carefully consider, detailed information concerning significant environmental impacts;" and (2) "the relevant information will be made available to the larger audience that may also play a role in both the decisionmaking process and the implementation of that decision." *Robertson v. Methow Valley Citizens Council*, 490 U.S. 332, 349 (1989). NEPA "emphasizes the importance of coherent and comprehensive up-front environmental analysis to ensure informed decision-making to the end that the agency will not act on incomplete information,

[12] Buffer Zone fact sheet, http://www.epa.gov/oppsrrd1/reregistration/soil_fumigants/buffer-zones-fs.htm (Ex 10).
[13] *See, e.g.,* Sulfuryl Fluoride Risk Characterization Document, Volume I, Health Risk Assessment, page 34 (showing sulfuryl fluoride to be toxic to mammals) (Ex 11)

only to regret its decision after it is too late to correct." *Center for Biological Diversity v. United States Forest Serv.*, 349 F.3d 1157, 1166 (9th Cir. 2003) (citation omitted); *see also Oregon Natural Desert Association v. U.S. Bureau of Land Management*, 531 F.3d 1114, 1120 (9th Cir. 2008) ("NEPA's purpose is realized not through substantive mandates but through the creation of a democratic decisionmaking structure that, although strictly procedural, is almost certain to affect the agency's substantive decisions.) (internal alterations and quotation marks omitted).

To accomplish these purposes, NEPA requires all agencies of the federal government to prepare a "detailed statement" that discusses the environmental impacts of, and reasonable alternatives to, all "major Federal actions significantly affecting the quality of the human environment." 42 U.S.C. § 4332(2)(C). This statement is commonly known as an environmental impact statement ("EIS"). *See* 40 C.F.R. Part 1502. An EIS must provide a "full and fair discussion of significant environmental impacts" of a proposed action, "supported by evidence that the agency has made the necessary environmental analyses." *Id*. at § 1502.1. A limited discussion of impacts is permissible only where the EIS demonstrates that no further inquiry is warranted. *Id*. at § 1502.2(b).

An EIS must also consider the cumulative impacts of the proposed action together with past, present and reasonably foreseeable future actions, including all federal and non-federal activities. 40 C.F.R. § 1508.7. As the Ninth Circuit has repeatedly emphasized, a cumulative impacts analysis "must be more than perfunctory; it must provide a useful analysis of the cumulative impacts of past, present, and future projects." *Klamath-Siskiyou Wildlands Ctr. v. Bureau of Land Mgmt*., 387 F.3d 989, 994 (9th Cir. 2004). Moreover, a cumulative impacts analysis must be timely, and it is "not appropriate to defer consideration of cumulative impacts to a future date when meaningful consideration can be given now." *Kern v. United States Bureau of Land Mgmt.*, 284 F.3d 1062, 1075 (9th Cir. 2002); *see* 40 C.F.R. § 1501.2 ("Agencies shall integrate the NEPA process with other planning at the earliest possible time").

In addition, EPA must comply with its ESA section 7(a)(2) obligations to ensure that threatened and endangered species would not be harmed by this action.[14] In order to fulfill the substantive purposes of the ESA, federal agencies are required to engage in consultation with FWS (and/or NMFS) to "insure that any action authorized, funded, or carried out by such agency . . . is not likely to jeopardize the continued existence of any endangered species or threatened species or result in the adverse modification of habitat of such species. . . . determined . . . to be critical . . . ." 16 U.S.C. § 1536(a)(2) (Section 7 consultation).

Section 7 consultation is required for "any action [that] may affect listed species or critical habitat." 50 C.F.R. § 402.14. Agency "action" is defined in the ESA's

[14] For instance, the attached map (Ex 12) shows that the Critical Habitat of many threatened or endangered species is found in the counties where this action would take place.

implementing regulations to include "(b) the promulgation of regulations; (c) the granting of licenses, contracts, leases, easements, rights-of-way, permits, or grants-in-aid; or (d) actions directly or indirectly causing modifications to the land, water, or air." 50 C.F.R. § 402.02.

At the completion of consultation FWS (or NMFS) will issue a biological opinion that determines if the agency action is likely to jeopardize the species. If so, the opinion may specify reasonable and prudent alternatives that will avoid jeopardy and allow the agency to proceed with the action. 16 U.S.C. § 1536(b). FWS (or NMFS) may also "suggest modifications" to the action during the course of consultation to "avoid the likelihood of adverse effects" to the listed species even when not necessary to avoid jeopardy. 50 C.F.R. § 402.13.

Section 7(d) of the ESA, 16 U.S.C. § 1536(d), provides that once a federal agency initiates consultation on an action under the ESA, the agency, as well as any applicant for a federal permit, "shall not make any irreversible or irretrievable commitment of resources with respect to the agency action which has the effect of foreclosing the formulation or implementation of any reasonable and prudent alternative measures which would not violate subsection (a)(2) of this section." The purpose of Section 7(d) is to maintain the environmental status quo pending the completion of consultation. Section 7(d) prohibitions remain in effect throughout the consultation period and until the federal agency has satisfied its obligations under Section 7(a)(2) that the action will not result in jeopardy to the species or adverse modification of its critical habitat.

These ESA requirements apply to EPA's permitting of pesticides under FIFRA. *Wash. Toxics Coalition v. EPA*, 413 F.3d 1024, 1032 (9th Cir. 2005) ("We agree with the Eighth Circuit that even though EPA registers pesticides under FIFRA, it must also comply with the ESA when threatened or endangered species are affected."); *Defenders of Wildlife v. Administration*, 882 F.2d 1294 (8th Cir. 1989) (affirming section 7's application to EPA's registration of pesticides).

IV. Conclusion

EPA's best course – and the one the law demands– is to deny this experimental use permit altogether, as the climate impacts of sulfuryl fluoride make its use unjustifiable. Other offices within EPA are working diligently to control climate change, which the agency recognizes as the most pressing environmental challenge of our times. The Office of Pesticide Programs ought not to work at cross purposes with the rest of the Agency and, under FIFRA and controlling regulations, it must not do so.

Sincerely yours,

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