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SUBJECT: EVALUATION OF "2013 PESTICIDE USE DATA OF ADJUSTED POUNDS 1,3-DICHLOROPROPENE IN CALIFORNIA", SUBMITTED BY DOW AGROSCIENCES ON 4/25/14

Key Issue

In April 2014, Dow AgroSciences (DAS) submitted 2,977 records for 1,3-dichloropropene use in California in 2013. On June 30, 2014*, the Department of Pesticide Regulation's (DPR's) Pesticide Use Report database (PUR), yielded 2,900 records for 1,3-dichloropropene use in 2013. How do these two datasets compare?

*(*It should be noted that as of June 30, 2014, Calaveras, Del Norte, Humboldt, Lake, Mendocino, Napa, San Benito, Siskiyou and Trinity counties had not completely reported all of their PUR transactions for 2013 to DPR.)*

Background

1,3-dichloropropene (1,3-D) is a fumigant used to control several soil-borne pests prior to planting a variety of crops. In 2013 most 1,3-D use occurred in the San Joaquin Valley and Central Coast regions, although other applications were reported statewide including in the Coachella Valley, Sacramento Valley and Ventura County. In 1990, all permits for the use of 1,3-D were suspended in California. This action was based upon the results of limited monitoring studies in one high use county that indicated potentially high risk of cancer if some of the detected inhalation exposure levels persisted over a long-term (70 years). Following this action, DAS conducted several years of research to reduce exposures to handlers and bystanders, and proposed mitigation measures. Implementing the new use practices to reduce ambient air exposure in combination with limits on the absolute amount of the fumigant used, DPR allowed the reintroduction of 1,3-D in 1995. The regulatory requirements both on use practices and limitations on the amount used have been modified several times since 1995. Since 1999, the key mechanism that has been used to restrict use has been a cap on 1,3-D use within each township (6x6 mile area) of 90,250 pounds adjusted total pounds per year which is administered by DAS as a requirement for continued

registration. However, use is allowed above the cap in townships where use since 1995 has been significantly under the amount allowed by the cap. (The increase in annual use is limited to a total of 180,500 pounds, twice the 90,250-pound cap.) This refinement uses a limited, retrospective-averaging approach to modify annual township limits, while retaining the average use target level.

Evaluating the data provided by DAS

Four records in the DAS dataset contained township, range, section attributes that are in conflict with the county attribute, according to DPR's Township, Range and Section geospatial database (PLSNET.shp) (Table 1).

Table 1. Record attribution uncertainty

County	Section	Township	Range	T_R	Report_ID
Kings	22	25S	17E	25S 17E	PUR-2829815
Tulare	15	25S	19E	25S 19E	PUR-2387558
Tulare	21	27S	31E	27S 31E	PUR-2841455
Tulare	21	27S	31E	27S 31E	PUR-2841464

Either these sections should be designated as being in Kern County, or there is an error in the township, range, section reporting by DAS. These records were eliminated from the data evaluation.

The number of applications and the total pounds of 1,3-D applied was calculated for each township.

Table 2. Overall Data Comparison

	DAS	PUR
# Townships in **both** datasets	323	323
# Townships **only** in DAS Data	16	
# Townships **only** in PUR		5
Total number of Townships	339	328

Of the 323 townships that were found in both the DAS data and the PUR, 86 townships had a different number of reported applications. In fifty (50) of those 86 townships, a total of 98 records were found in the DAS data that were not in the PUR, and in the remaining 36 townships, a total of 69 records were found in the PUR that were not in the DAS data (Table 3). As of 6/30/2014, Del Norte County had not submitted any 2013 use reports to the PUR, Lake County's submissions were current only through June, 2013, and Napa County's submissions for the months of August through December were significantly below those of previous years. PUR submissions from San Benito

County for December of 2013 were also incomplete. Thirty seven records (totaling 122,720 lbs 1,3-D) reported by DAS for Del Norte County accounted for fifty percent of the discrepancy between the 16 townships found in the DAS dataset, but not in the PUR.

Table 3. Summary of differences between number of records and pounds of 1,3-D applied

	Additional # Records	Unaccounted 1,3-D	Range in Unaccounted 1,3-D per Township	Counties*
16 Townships Found in DAS - Not Found in PUR	52	244,962 lbs	170-114,515 lbs	Del Norte, Fresno, Glenn, Imperial, Lake, Merced, Modoc, Riverside, San Joaquin Ventura, Tulare
5 Townships Found in PUR - Not Found in DAS	5	21,492 lbs	9 – 10,172 lbs	Kern, Imperial, Riverside, Ventura
50 Townships with MORE records in DAS than in PUR	98	472,197 lbs	180-39,330 lbs	Colusa, Fresno, Glenn, Imperial, Kern, Kings, Madera, Monterey, Orange, Riverside, San Benito, San Joaquin, San, Luis Obispo, San Mateo, Santa Barbara, Santa Cruz, Shasta, Stanislaus, Tulare, Yolo, Yuba
36 Townships with MORE records in PUR than in DAS	69	274,647 lbs	-244-33,324 lbs	Fresno, Imperial, Kern, Madera, Merced, Monterey, Napa, San Joaquin, San Mateo, Santa Barbara, Sonoma, Stanislaus, Sutter, Tulare, Ventura

**Counties in red indicate incomplete PUR data submissions*

Under the California Management Plan, a limit of 90,250 **adjusted** pounds of 1,3-D per calendar year is available for use in each of the twelve (12) townships listed below (Table 4). For all other townships, a maximum of 180,500 **adjusted** pounds of 1,3-D can be used on a calendar year basis.

$$\text{Adjusted pounds (ATP Used)} = \text{Adjustment Factor}^{\dagger} \times \text{pounds of 1,3-D used}$$

† *Adjustment Factor ranges between 0.3 and 2.3*

One third of the 2,977 of the DAS data records had adjustment factors greater than 1.

The Pesticide Use Reporting database contains only records of actual pounds of active ingredient applied, and so this metric was used to compare 1,3-D usage between the two datasets. It should be noted that the way in which pounds of active ingredient is calculated in the DAS data appears inconsistent with the PUR, resulting in values that differ by approximately ± 1 percent between the two datasets. Table 4 illustrates the similarities and differences between the two datasets for the twelve townships identified in the California Management Plan. Five of the townships had the same number of applications reported, and of these five, the total pounds applied within four townships were within ± 1 percent of each other. Discrepancies in the remaining seven townships ranged from 1 – 3 applications.

Table 4. Pounds of 1,3-D applied in twelve Townships

	DAS Data		**PUR**		**Difference**	
MTR	# Records	1,3-D (lbs)	# Records	1,3-D (lbs)	# Records	lbs AI as % of PUR
Fresno/Tulare						
M16S23E	70	135,209.02	70	123,576.33	0	109.4
Imperial						
S16S15E	10	42,117.57	8	30,594.29	2	137.7
Kern						
M31S29E	11	77,502.49	9	58,244.10	2	133.1
Merced						
M06S11E	70	162,389.15	70	163,295.26	0	99.4
M06S12E	49	146,143.97	51	170,066.63	-2	85.9
M07S11E	54	151,530.93	57	159,387.43	-3	95.1
M07S12E	56	146,982.11	56	147,530.76	0	99.6
Monterey						
M14S03E	60	235,577.98	59	230,485.10	1	102.2

Santa Barbara						
S10N34W	59	305,388.47	57	293,991.66	2	103.9
Ventura						
S01N20W	4	10,115.12	4	10,091.69	0	100.2
S02N21W	29	123,256.72	30	124,749.26	-1	98.8
S02N22W	19	125,068.54	19	124,722.23	0	100.3

It was not possible to make a unique key variable for each of the DAS records in order to match them to the corresponding records in the PUR with complete certainty. The PUR identifies growers and their application locations by permit number and site identification number, respectively, whereas the data provided by DAS identified the growers by name only. Should the corresponding permit numbers and site location identifiers be provided by DAS, then a more accurate comparison of the data can be made.

cc Marylou Verder-Carlos
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