Chemical	Case No.	PC Code	Date	Analyst
Carbofuran	0101	90601	March 28, 2002	Anthony J. Gilbert

Quantitative Usage Analysis

Carbofuran is a carbamate-type pesticide used in agriculture to control insects and nematodes in grain, forage, vegetable, seed and fiber crops. Total carbofuran use is approximately 1.9 million pounds of active ingredient (a.i.) per year on about 2.6 million acres treated. Corn accounts for the most usage (620 thousand pounds a.i. on 860 thousand acres treated), with lesser amounts being used on other grain, fiber and forage crops including alfalfa (400 thousand pounds a.i. on 720 thousand acres treated), potatoes (280 thousand pounds a.i. on 240 thousand acres treated), rice (200 thousand pounds on 210 thousand acres treated)[1], cotton (190 thousand pounds a.i. on 220 thousand acres treated), and sorghum (93 thousand pounds a.i. on 160 thousand acres treated). Lesser amounts of carbofuran are used on a wide range of other crops including grapes, sunflower, soybeans, tobacco, sugarcane, cucumbers and sweet corn. Although corn dominates usage, carbofuran is used on only a small proportion of corn sown area (1%). It is typically applied one time per season at a rate of about 0.7 pounds a.i. per acre. When carbofuran is used on other crops, it is typically applied once per season, with application rates ranging from 0.2 pounds a.i. per acre (spring wheat) to 2.5 pounds a.i. per acre (tobacco). Most carbofuran is applied in a liquid flowable form, but up to 2500 pounds of granular formulation may be sold for use on cranberries (in Washington State only), cucurbits (Southeastern states only), and pine seedlings in pine progeny tests.

1- Figures for usage are historical averages and it should be noted that carbofuran registration on rice has been cancelled.

QUANTITATIVE USAGE ANALYSIS - CARBOFURAN*

Site	Acres Grown (000)	Acres Treated (000)		% of Crop Treated		LB AI Applied (000)		Average Application Rate			States of Most Usage
		Wtd Avg	Est Max	Wtd Avg	Est Max	Wtd Avg	Est Max	lb ai/ acre/yr	#appl / yr	lb ai/ A/appl	(% of total lb ai used on this site)
Alfalfa	23176	720	1628	3%	7%	400	897	0.6	1.0	0.5	CA OK KS UT CO KY 53%
Barley	6378	9	23	0%	0%	3	12	0.3	1.0	0.3	ID KY ND MT 81%
Cantaloupes	71	1	2	2%	2.8%	2	4	1.3	1.9	0.7	IN MD NJ IL 84%
Corn	70800	860	2019	1%	3%	620	1724	0.7	1.1	0.6	NE KS IA IL NC IN 59%
Cotton	13246	220	655	2%	5%	190	374	0.9	1.9	0.5	TX OK MS AR LA 84%
Cucumbers, Fresh	56	3	5	6%	9%	3	6	1.1	1.1	1.0	MI 81%
Cucumbers, Proc.	95	6	11	6%	12%	6	11	1.0	1.0	0.9	MI 100%
Grapes	877	17	40	2%	5%	21	46	1.3	1.0	1.3	CA 100%
Oats/Rye	5836	3	5	0%	0%	2	3	0.6	1.0	0.6	MS NC 88%
Peanuts	1500	3	7	0%	0%	4	12	1.3	1.4	0.9	VA NC OK TX GA 86%
Peppers	99	5	20	5%	20%	5	20	0.9	1.0	0.9	NM 100%
Potatoes, Fall	1221	240	430	20%	35%	280	510	1.2	1.3	0.9	WA ID ND OR 88%
Rice**	3193	210	490	7%	15%	200	473	1.0	1.0	0.9	LA CA TX 90%
Sorghum	9879	160	320	2%	3.2%	93	186	0.6	1.0	0.6	KS TX NM MO IL 83%
Soybeans	63897	22	78	0%	0%	13	27	0.6	1.1	0.6	DE NC IL NY GA IN 81%
Strawberries	32	1	2	2%	6.2%	1	3	1.3	1.0	1.3	OR CA PA WA 89%
Sugarcane	862	15	52	2%	6%	14	40	0.9	1.0	0.9	FL LA 81%
Sunflower	3090	34	107	1%	3%	21	55	0.6	1.0	0.6	ND KS SD 84%

Site	Acres Grown (000)	Acres Treated (000)		% of Crop Treated		LB AI Applied (000)		Average Application Rate			States of Most Usage
		Wtd Avg	Est Max	Wtd Avg	Est Max	Wtd Avg	Est Max	lb ai/ acre/yr	#appl / yr	lb ai/ A/appl	(% of total lb ai used on this site)
Sweet Corn, Fresh	226	5	22	2%	10%	4	18	0.8	1.1	0.8	MI NY NJ 100%
Sweet Corn, Proc.	461	15	30	3%	7%	15	30	1.0	1.0	1.0	NY MI IL 100%
Tobacco	714	5	10	1%	1%	12	31	2.5	1.0	2.4	KY NC VA TN OH 83%
Watermelons	140	7	14	5%	10%	6	11	0.8	1.1	0.8	VA IN MD OK MO NC 84%
Wheat, Spring	20611	18	101	0%	0%	3	16	0.2	1.0	0.2	ND MN MT 86%
Wheat, Winter	43213	33	87	0%	0%	11	32	0.3	1.1	0.3	OK KY ID TX MT NC 69%
Total		**2611**				**1927**					

*Until 1999, USDA and EPA proprietary data indicate that there was minor usage on a number of unregistered crops that have no established tolerances in 40 CFR (180.254). These unregistered crops include apples, dry beans and peas, green peas and beans, blueberries, cherries, peaches, pears, pecans, raspberries, tomatoes and walnuts. No use was reported on unregistered crops after 2000.

**Usage on this site is historical. Carbofuran registration for rice has been cancelled.

Weighted average--the most recent years and more reliable data are weighted more heavily.
Est Max = Estimated maximum, which is estimated from available data.
Average application rates are calculated from the weighted averages.

NOTES ON TABLE DATA

Calculations of the above numbers may not appear to agree because they are displayed as rounded:
    -to the nearest 1000 for acres treated or lb. a.i. (Therefore 0 = < 500).
    -to the nearest whole percentage point for % of crop treated (Therefore 0% = < 0.5%).

SOURCES: EPA data (1990-1999), USDA - NASS (1990-1999)