Idaho State Department of Agriculture
Three Years of Pesticide Monitoring Results
2012, 2013, and 2014
Indian Creek
Fact Sheet

The Idaho State Department of Agriculture has been conducting a three year study, to determine the extent of pesticide residues within Indian Creek. Indian Creek drains approximately 228,928 acres, with 62,726 acres designated as agricultural (27%). Indian Creek flows through Elmore, Ada, and Canyon Counties and the cities of Kuna, Nampa, and Caldwell before entering the Boise River (Figure 1). Over the three years, one station was dropped in 2014 and one was added (Wilson Drain) in 2013. Even though some stations were added or dropped, the data collected still gives a good representation of the presence of pesticide residues within Indian Creek.

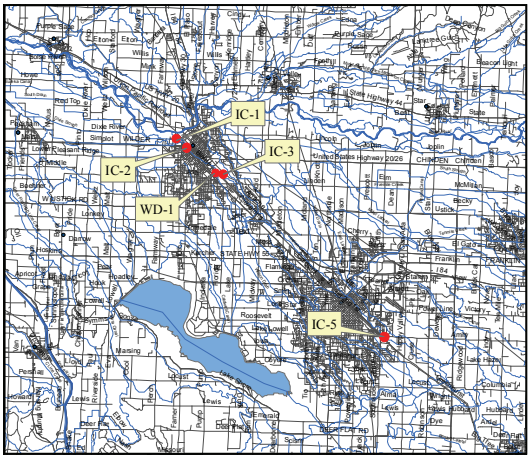

Figure 1. Indian Creek monitoring stations.

Desethyl atrazine, which is a degradate of the herbicide atrazine, had the largest number of detections (129) over the three years (Table 1). That was followed by the herbicide 2,4-D (129) and the herbicide bromacil (94). The insecticide chlorpyrifos, which can be highly toxic to aquatic species, had 24 total detections, followed by the insecticides methomyl (12) and ethoprop (8) (Table 1). The total detections and number of herbicides, insecticides, and degradates of atrazine per year can be seen in Figure 2.

Table 1. Total detections over three years.

Pesticides	Type	Trade Name	# Detects
2,4-D	H	Weedar 64	129
alachlor	H	Lasso	1
atrazine	H	Aatrex	40
bifenthrin	I	Diverge IF	5
bromacil	H	Krovar	94
bromoxynil	H	Buctril	36
chlorpropham	H	Spud Guard	21
chlorpyrifos	I	Lorsban	24
dacthal	H	DacthalW-75	7
desethyl atrazine	D	—	189
dicamba	H	Dicamba 4	5
diuron	H	Karmex	45
ethoprop	I	Mocap	8
hexazinone	H	Velpar	50
lindane	H	Agrocide	2
malathion	I	Fyfanon	3
MCPA	H	Rhomene	21
methomyl	I	Lannate	12
metolachlor	H	Dual	51
metribuzin	H	Sencor	15
pendimethalin	H	Prowl	44
simazine	H	Princep	6
terbacil	H	Sinbar	33

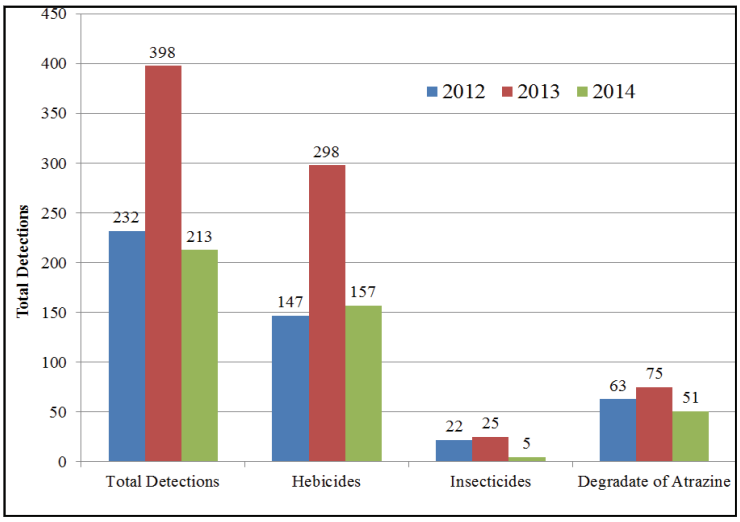

Figure 2. Overall detections for all three years.

Pesticides of Concern

ISDA considers a potential Pesticide of Concern (POC) as any pesticide detection that is greater than or equal to fifty percent (≥50%) of an established Environmental Protection Agency (EPA) Aquatic Life Benchmark. EPA Aquatic Life Benchmarks list pesticide concentrations that could have acute or chronic effects on fish and invertebrates and acute effects on both nonvascular and vascular plants. Acute refers to the effects from a single dose or repeated exposure over a short period while chronic toxicity is exposure to a toxin over long-term or repeated low level exposure.

Over the three years of monitoring Indian Creek, there was one POC identified in 2012, three identified in 2013, and one identified in 2014 (Figure 3). There were a total of 24 chlorpyrifos (Lorsban) detections over the three year period. All detections were considered a POC by ISDA because they were ≥50% of the EPA benchmark for acute invertebrates (0.05 ppb) and chronic invertebrates (0.04 ppb). The five bifenthrin detections were all considered a POC with three detections being ≥50% of both the fish chronic (0.04 ppb) concentration and the invertebrate chronic concentration benchmarks (0.0013 ppb). The other two bifenthrin detections were ≥50% of the invertebrate chronic benchmark (0.0013 ppb). The three malathion detections were also a POC because their concentrations were all greater than the chronic level for invertebrates (0.035 ppb).

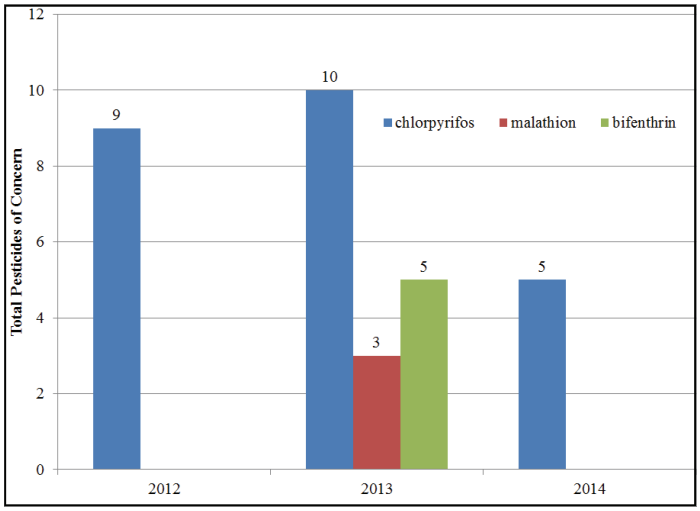

Figure 3. Pesticides of concern for each monitoring year.

The three years of evaluation shows the large variability of pesticide residues within Indian Creek from year to year. The 2013 year had the largest number of overall detections (398), followed by 2012 (232), and 2014 (213). Detections of herbicides were highest in 2013 (298) followed by 2014 (157) and 2012 (147). Insecticide detections in 2013 were the highest at 25, followed by 2012 with 22, and 2014 had a low number of insecticide detections with five.

The reason for such variability in the number of detections from year to year are due to many factors, including pesticide use patterns, changes in cropping rotations, pesticide use, irrigation techniques, weather conditions, monitoring schedule and numerous other factors.

Recommendations

⇒ Read and follow label directions, always follow label directions for water quality protection.

⇒ Follow Chemigation Law/Rules, applicator must be licensed and follow state chemigation laws.

⇒ Conduct maintenance and calibration of application equipment.

⇒ Implementation of management strategies: field scouting, evaluation of pest control needs, selection of proper pesticides, use of less toxic pesticides, irrigation management, etc.

⇒ Implement BMPs, including conservation buffers, vegetative filter strips, sediment basins, and setbacks from live water.

⇒ Avoid runoff due to weather events, check the forecast prior to pesticide applications.

⇒ Avoid overspray and drift.

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