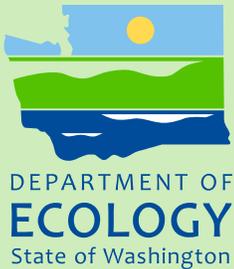




*A Department of Ecology
Report*

*Agricultural and Outdoor Burning
2008*



May 2010
Publication no. 10-02-010

Publication and Contact Information

This report is available on the Department of Ecology's website at www.ecy.wa.gov/biblio/1002010.html

For more information contact:

Air Quality Program
P.O. Box 47600
Olympia, WA 98504-7600

Phone: 360-407-6800

Washington State Department of Ecology - www.ecy.wa.gov

- Headquarters, Olympia 360-407-6000
- Northwest Regional Office, Bellevue 425-649-7000
- Southwest Regional Office, Olympia 360-407-6300
- Central Regional Office, Yakima 509-575-2490
- Eastern Regional Office, Spokane 509-329-3400

Cover Picture: A field burn in Franklin County.

This is what we like to see -- smoke rising high in the air into the transport layer where it can disperse without impacting the surrounding area.

If you need this publication in another format, please contact the Air Quality Program at (360) 407-6800. If you have a hearing loss, call 711 for Washington Relay Service. If you have a speech disability, call 877-833-6341.

Agricultural and Outdoor Burning in
Washington State
2008

A Report on the Washington State Department of
Ecology's Management of Agricultural and Outdoor
Burning Activities in 2008

Air Quality Program
Washington State Department of Ecology
Olympia, Washington

Purpose

Smoke from agricultural and outdoor burning can cause bronchial problems, asthma flare-ups, and increased risk of dying from heart and lung disease. It also affects the environment by harming soil, water, crops, forest, wildlife, and visibility. Ecology's Air Quality Agricultural and Outdoor Burn Program works to reduce the toxic effects of smoke on Washington residents. We do this through permitting programs (both Agricultural and Special Burn Permits), building strong working relationships with our city and county counterparts, and working closely with the citizens and industries. This report summarizes the amount of agricultural burning allowed during 2008.

Agricultural Burning: Smoke Knows No Boundaries

In 2008, a long-time goal of coordinating smoke management across political boundaries took a big step forward. Air Quality Specialists from the Washington State Department of Ecology, Idaho State Department of Environmental Quality (IDEQ), Nez Perce Tribe, Coeur d'Alene Tribe, Kootenai Tribe, Umatilla Tribe, along with EPA, made a commitment to strengthen the working relationships between the tribes and agencies. This commitment is a very positive work in progress.

In early 2008, Ecology's Air Quality Staff, among others, assisted IDEQ in developing their new, federally approved Agricultural Burn Program. Later in the year, air quality personnel from the tribes and agencies came together for two days of training in Coeur d'Alene. It served as a good opportunity to meet people from IDEQ and the tribes who are responsible for making daily burn decisions in their respective jurisdictions. Among other activities, meteorologists from Washington and Idaho taught advanced weather training.

During peak burn seasons, growers in all our jurisdictions are requesting to burn. At these times, Ecology Burn Team members, IDEQ staff, and representatives from the Tribes meet via telephone conference call every morning. Before posting our daily burn decision, we share our thoughts on the current burn conditions in our areas, including wind direction and vertical lift. We also talk about locations and number of acres being considered for burning in each area. All of us have come to realize we share the air and are committed to work with each other to avoid creating more smoke than we believe the air-shed can handle at any given time. Our foremost concern is to prevent negative

effects on the public while allowing growers to burn fields and orchard debris when necessary.

Keeping Track of Agricultural Burning

Every year, growers in Washington wishing to burn must apply for, pay for, and be issued an agricultural burn permit. The money received from the permits helps Ecology and local clean air agencies partially fund their programs. Permit applications contain information about what a grower wishes to burn, why they wish to burn, and what alternatives to burning they have considered.

Ecology has delegated some of the work of issuing agricultural permits to counties. The delegated counties have assigned the day-to-day operation of the permit program to their Conservation Districts (CDs). Ecology oversees the work of the CDs through close communication with the CD staff, annual trainings, and audits. The CDs' work varies by county and degree of delegation. It can include assisting growers with filling out agricultural permit applications, evaluating alternatives, entering permits into an Ecology database, and providing technical assistance. CDs are a great help during peak burn times. Some even assist Ecology by metering of acres to be burned on each given burn day.

Burn Team Staff make a burn decision every day of the year. Once the decision is made, staff sends out an email of that day's decision to those who have signed up to receive it. In addition, the burn team person on duty for the day makes a recording on the "***Call Before You Burn***" line **(1-800-406-5322)** for each county. The recording specifies whether the day is a 'burn' or 'no burn' day as well as times, wind direction, and any additional restrictions.

Burn decisions are made based on many factors. Some of the information the burn team must analyze daily includes:

- how much smoke Ecology thinks the air-shed can hold on a given day;
- what the monitors tell us about air quality at a specific location;
- how many acres are permitted in each area;
- where the permitted areas are located in relation to population centers;
- whether prescribed fires or wildfires are already putting smoke in the air;
- what adjoining states and tribes are planning to burn that day; and
- meteorological and weather model forecasts about where smoke will go if burning is allowed in a certain area.

On average for 2008, more than 50 percent of the days were No-Burn Days. Less than 30 percent of the days were Burn Days, restricted only by burn time limits. The period between April 1 and June 30 had the lowest percentage of No Burn Days at 21 percent, with more than 65 percent of days being Burn-Days restricted only by time limits.

- **No Burn Days** = Number of days “No-Burn” was called for the county or zone
- **Open Burn Days** = Number of days burning was controlled with a start and stop time for the county or zone.
- **Other Burn Days** = Number of days burning was controlled by zone or acre/pile limit AND with a start and stop time for the county OR zone.

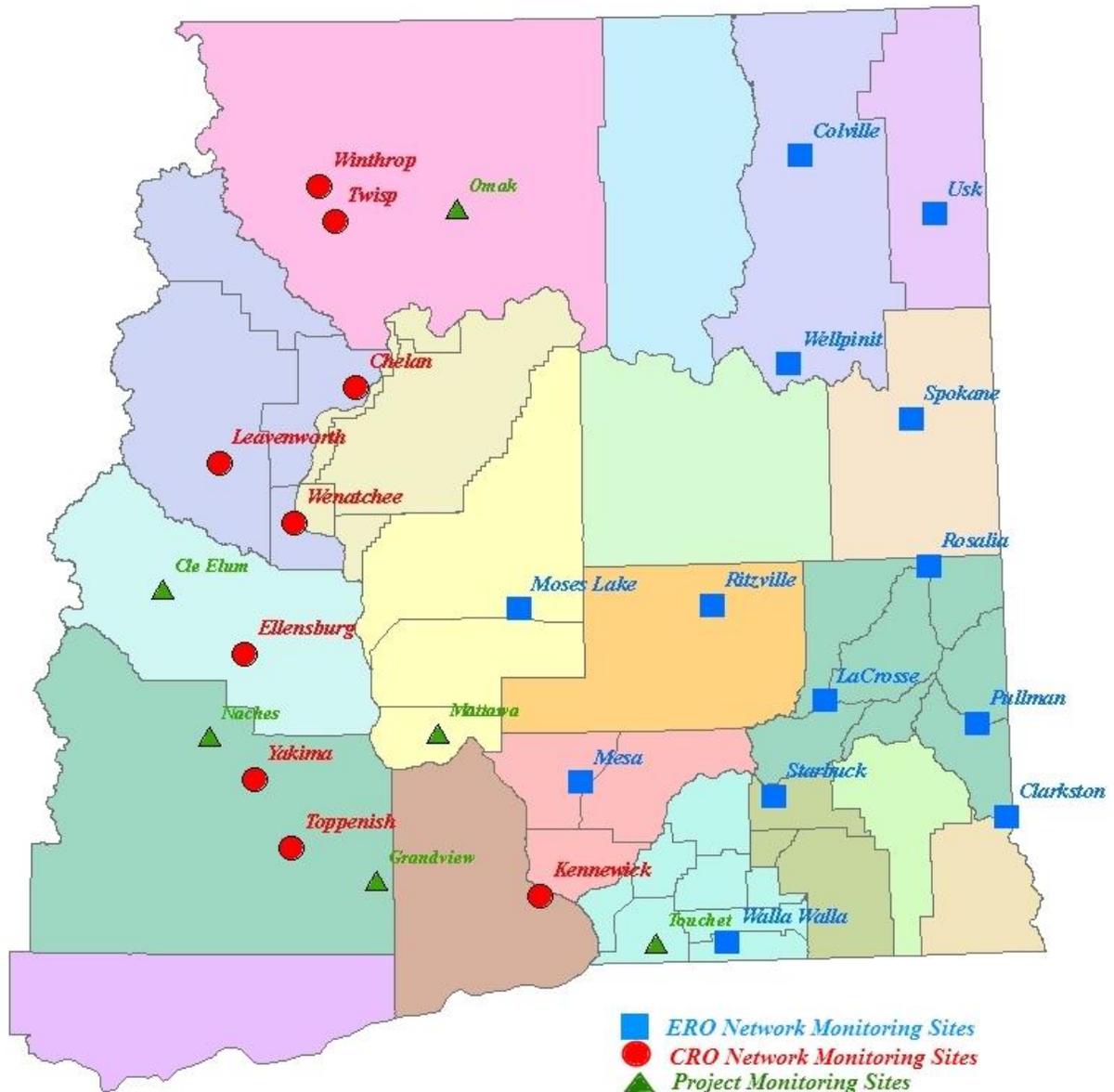
The following table summarizes the Daily Burn Decisions for the Eastern Regional Office Counties.

Agricultural Burn/No Burn Days In 2008

	No-Burn Days	% No Burn Days	Open-Burn Days	% Open-Burn Days	Other Burn Days	% Other Burn Days
Adams	209	57%	143	39%	14	4%
Asotin	227	62%	128	35%	11	3%
Columbia	182	50%	102	28%	82	22%
Zone 11:	1	0%	0	0%	81	22%
Zone 12:	3	1%	0	0%	79	22%
Zone 13:	2	1%	1	0%	79	22%
Franklin	209	57%	121	33%	36	10%
Zone 51:	13	4%	3	1%	20	5%
Zone 52:	6	2%	9	2%	21	6%
Zone 53:	6	2%	10	3%	20	5%
Garfield	226	62%	125	34%	15	4%
Grant	189	52%	130	36%	47	13%
Zone 41:	11	3%	12	3%	24	7%
Zone 42:	13	4%	8	2%	26	7%
Zone 43:	8	2%	8	2%	31	8%
Lincoln	207	57%	146	40%	13	4%
Stevens	198	54%	104	28%	64	17%
& P. Oreille	191	52%	102	28%	73	20%
Walla Walla	201	55%	86	23%	79	22%
Zone 01:	27	7%	25	7%	27	7%
Zone 02:	22	6%	18	5%	39	11%
Zone 03:	32	9%	25	7%	22	6%
Zone 04:	17	5%	21	6%	41	11%
Zone 05:	36	10%	18	5%	25	7%
Zone 06:	26	7%	15	4%	38	10%
Zone 07:	26	7%	19	5%	34	9%
Zone 08:	22	6%	15	4%	42	11%
Whitman	209	57%	111	30%	46	13%
Zone 1:	9	2%	11	3%	26	7%
Zone 2:	10	3%	7	2%	29	8%
Zone 3:	13	4%	5	1%	28	8%
Zone 4:	8	2%	11	3%	27	7%
Zone 5:	5	1%	8	2%	33	9%
Zone 7:	5	1%	7	2%	34	9%
Zone 8:	5	1%	8	2%	33	9%
Ferry	23	6%	0	0%	343	94%

*NOTE * Add Zone Specific info to County information to get Total Zone information
Example: Walla Walla County No Burn Days plus Walla Walla Zone 3 No Burn days = 233 Total No Burn days*

Monitoring the Air (or How Much Smoke is in the Air)



The map above shows Particulate Matter (Smoke) Air Quality Monitoring Stations in eastern Washington for 2008. There are 22 Network Monitoring Sites that gather data throughout the year. Six more Project Monitoring Sites gather data on a short term basis. Short term project sites are generally used to investigate areas where complaints and/or burn permits have indicated possible Air Quality problems.

Ecology works with the United States Forest Service, the Environmental Protection Agency and Native American Tribal governments to operate several of the monitoring stations. Ecology maintains or assists in maintaining a majority of the monitors in central and eastern Washington.

Burn Unit technical staff monitors smoke levels and ensure the objective quality of the data. If a monitor indicates high levels of smoke in an area, permitted burning is not allowed at that time. It does not matter if the smoke is from wood stoves, wild fires, prescribed burning, or agricultural burning.

The Burn Team makes smoke management decisions each burn day, in part, by using the “Grid” aspect of the monitoring locations. When a monitor in an area shows elevated particulate values (smoke) for the past day, staff must justify and document any burning in that area to show why Ecology thinks burning will not increase the amount of smoke in the area.

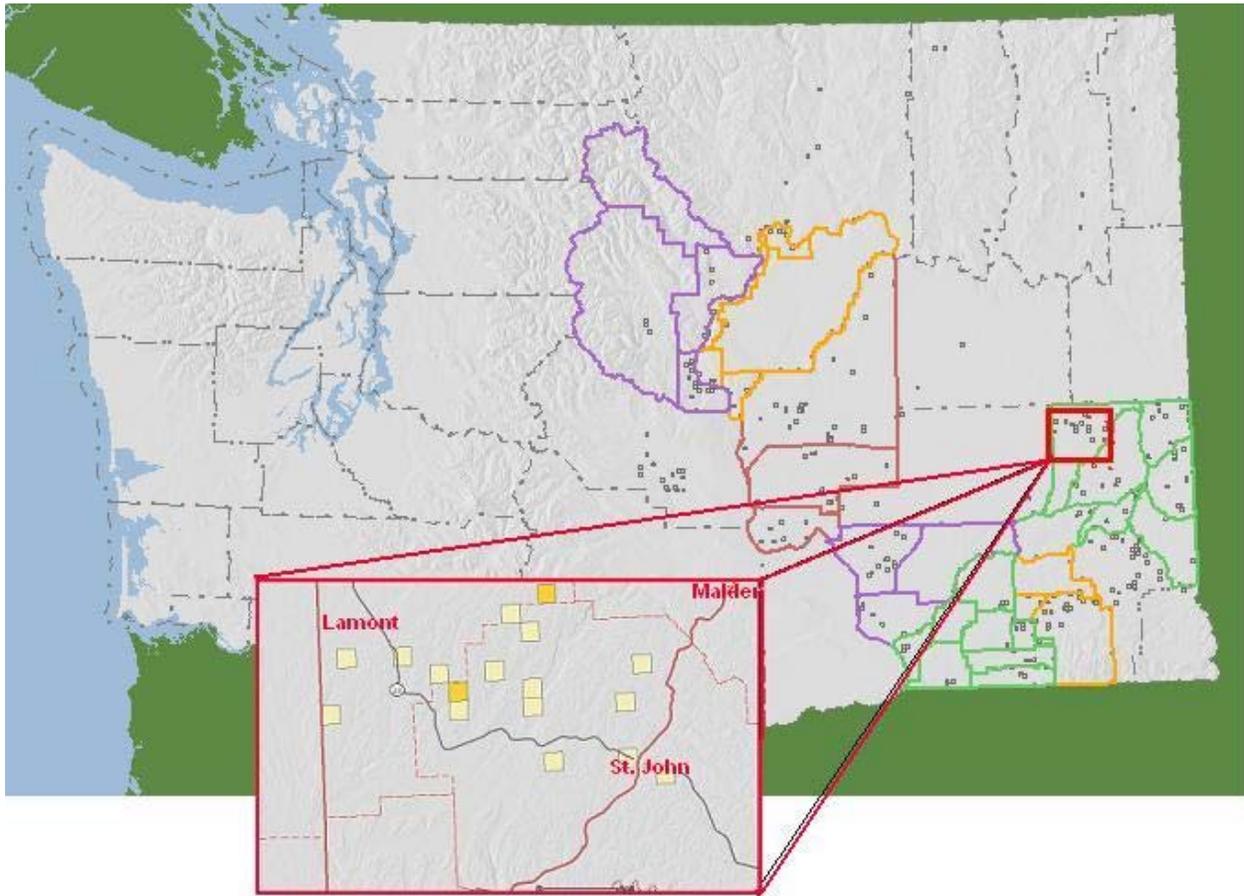
Mapping the Locations of Fields and Orchards

One of the tools the Burn Team uses when making the daily burn call is a Geographic Information System Mapping Program (GIS). The GIS, along with available weather reports, wind direction information, ventilation models, monitoring stations, and other meteorological information, assists team members as they make the daily burn decision.

The GIS is linked to our permit database. It allows Burn Team members to view the locations of growers with permits, what they wish to burn, and how many acres they have permitted in each location. Burn Team members can also see the location of the fields, orchards, and other types of permitted burns in relation to existing towns, roads, and other populated areas. The map is updated on a daily basis with information about new permits and permitted acres that have been burned.

On the next page is a sample picture of a GIS map showing the locations of permitted acres and permitted orchard tear-out piles active on one particular day.

Washington State Burn Permit Mapping System



Type	Application Number	Name	Common Name of field	Start	End	Contact Phone	Acres Permitted	Remaining	Status	Crop Type	S/T/R
AB	ERO-2010-0001-AG-FIELD	Farmer #1	Field A	2/26/2010	6/30/2010	(509) 555-1211	100	0	Burned	Wheat - Winter - Dryland	9 / 19 N / 40 E
AB	ERO-2010-0002-AG-FIELD	Farmer #2	Field B	2/26/2010	6/30/2010	(509) 555-1211	1200	700	Partial	CRP	3 / 19 N / 40 E
AB	ERO-2010-0003-AG-FIELD	Farmer #3	Field C	3/18/2010	6/30/2010	(509) 555-1213	400	400	Ready	Wheat - Winter - Dryland	13 / 19 N / 40 E

Agricultural burn unit members can access permit information using the GIS, including:

- the name and contact phone number of each grower;
- what the grower is planning on burning;
- how many acres are permitted for a specific field;
- if a field has already been burned, is ready to burn or is partially burned;
- the location of the field in relation to surrounding towns; and
- the Section, Township, and Range of the field.

Permitted Agricultural Burn Acres - 2008

The following chart shows the number of permitted agricultural acres in 2008 by county. Areas regulated by someone other than Ecology are displayed using a green background.

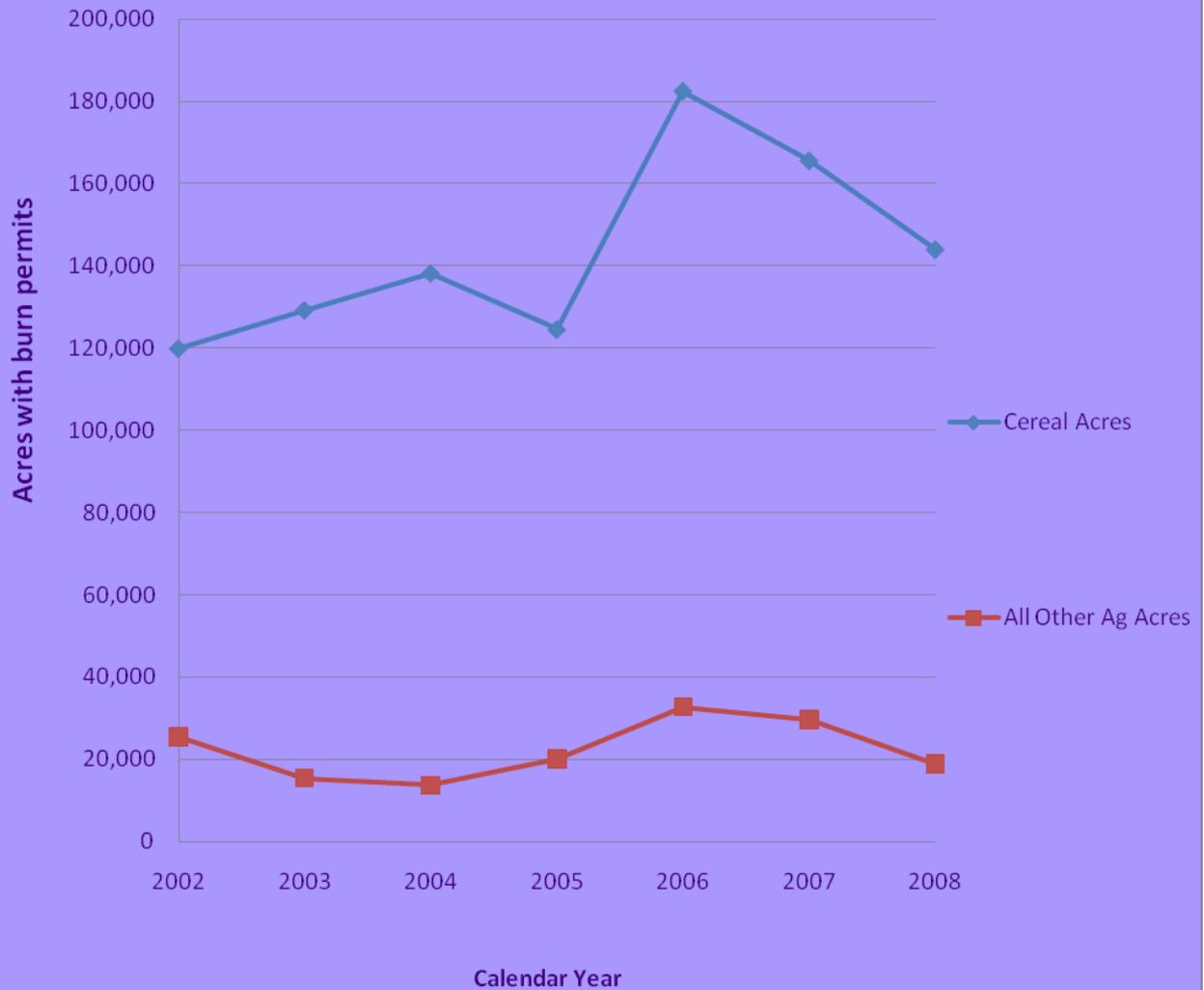
County	Spot Burns	Bale Burns	Cereal Grains	Other Crops	Orchard Tear Out	CRP	Total
Adams	60	0	4,958	0	225	10	5,253
Asotin	130	0	0	0	0	0	130
Chelan	0	0	0	0	171	0	171
Columbia	270	0	31,095	11	0	444	31,820
Douglas	0	0	50	0	126	0	176
Ferry	0	0	0	0	0	0	0
Franklin	10	7	12,215	205	45	1,479	13,961
Garfield	200	0	9,704	7	0	167	10,078
Grant	10	15	10,878	542	179	0	11,624
Kittitas	0	0	10	6	63	0	79
Klickitat	0	0	0	3	0	0	3
Lincoln	162	14	1,181	14	0	0	1,371
Northwest Clean Air	87	0	0	1,261	6	0	1,354
Okanogan	0	0	0	0	26	0	26
Puget Sound Clean Air	90	0	0	76	21	0	187
Spokane County Regional Clean Air	2	0	0	158	0	173	333
Stevens	31	0	0	0	0	0	31
Walla Walla	283	0	42,131	8,799	65	1,539	52,817
Whitman	938	0	31,819	162	0	572	33,491
Total Acres	2,273	36	144,041	11,244	927	4,384	162,905

The Agricultural Burning Task Force

The Agricultural Burning Practices and Research Task Force (Task Force) was established by section (RCW) 70.94.650 of the Washington State Clean Air Act. Their goal is to help reduce air pollution from agricultural burning. Task Force meetings are held three times a year. Ecology chairs the Task Force. The members of the Task Force represent various perspectives, including the agricultural community, the Department of Agriculture, public health, and conservation districts. This diverse group is empowered by the Clean Air Act to develop Best Management Practices (BMPs) to assist growers. They also have the authority to determine the amount of permit fees and to identify research.

More information about the Task Force is available online at www.ecy.wa.gov/programs/air/aqinfo/Task_force.htm .

Permitted Agricultural Burn Acres, 2002-2008



This graph shows how many agricultural acres in Washington have received burn permits over the past seven years (2002-2008). The majority of all acres permitted are cereal grain.

Education, Outreach, and Outdoor Burning

Ecology prefers to achieve compliance through education and outreach, working with local agencies, and providing technical assistance. In 2008, the Air Quality Program used education and outreach to better explain Urban Growth Areas (UGAs), alternatives to burning, and the negative consequences of burning to both children and adults. Ecology developed newsletters, newspaper advertisements, and public service announcements. In addition, Burn Team members attended meetings to provide information and answer questions about agricultural and outdoor burning.

Smoke complaints

In addition to the education and technical assistance provided during field visits, phone calls, and written materials, outdoor burn staff responds to complaints of illegal burning. The table below summarizes complaints received by Ecology during 2006, 2007, 2008. The complaints are separated by cause of the smoke.

Formal complaints investigated by Burn Team Members from 2006-2008

Type of Complaint	2006	2007	2008
Agricultural	28	21	43
Indoor/woodstove	11	8	9
Outdoor Burning	130	140	115
Other	4	28	42
Totals	172	197	209

Burn Team members spend a lot of time in the field in response to smoke complaints, technical assistance visits, and meetings with the CDs or growers. Ecology receives complaints each year from individuals who feel they have been affected by smoke from outdoor burning, agricultural burning, woodstoves, and other sources of smoke. Ecology not only treats each complaint as a serious issue to be investigated, but also as an opportunity for education. When time permits, a Burn Team member will go out and look at the site of the complaint to better address what kind of follow-up is appropriate.

Urban Growth Area restrictions

The creation of Urban Growth Areas (UGAs) through the Growth Management Act has added to the need for field visits and technical assistance visits. In central and eastern Washington, 60 areas have been identified as being in UGAs. For people within these

UGAs, residential and land clearing burns are no longer available alternatives for getting rid of their twigs and branches or clearing a lot to build a house.

For example, Grant County has a population of approximately 75,000 people, and 15 towns in the county have been identified as UGAs. Ecology's Air Quality Program works hard with the local governments and with Ecology's Waste 2 Resources Program to help residents find affordable alternatives to burning now that burning is no longer an option.

Special Burn Permits

Since the beginning of the burn program, the number of requests for Special Burn Permits (SBP) has increased each year. A SBP is needed when a proposed burn is larger than what meets the definition of a residential burn. When possible, a burn team member inspects the size and content of a pile or area covered by the SBP application before the permit is issued.

SBP holders must follow all burning laws (**it is illegal to burn anything other than natural unprocessed vegetation in Washington**). SBP holders must also follow the Ecology daily burn call.

Under state law, residential burns are still legal outside UGAs. Residential burns must contain only natural unprocessed vegetation from the location where it originated and can be no larger than 4 ft. by 4 ft. by 3 ft. Materials cannot legally be burned if they have been moved from a location inside of an UGA to a location outside of an UGA.

How Does Ecology Respond To Illegal Burning?

When education and technical assistance do not stop people from burning illegally, Ecology uses enforcement to gain compliance.

Once an illegal burn has been discovered, a Burn Team member investigates and decides the appropriate level of response. Ecology's ability to enforce against illegal burning comes from The Washington Clean Air Act, RCW 70.94. Formal enforcement actions include:

- **Notice of Correction (NOC):** This is a written warning sent to the burner. It includes information on what was illegal and what they must do to comply with the law. No monetary fine is attached.

- **Notice of Violation (NOV):** This is a written notice sent to the involved parties identifying specific violation(s) Ecology has documented through an investigation. When someone receives a NOV, Ecology is considering issuing a civil penalty.
- **Civil Penalty (referred to as Notice of Penalty (NOP)):** This involves issuing a monetary fine. Penalty amounts are determined by a facts-based matrix calculation, and do not exceed \$10,000 per violation per day. Recipients may file an appeal with the Pollution Control Hearings Board within 30 days of receipt of the NOP.

In Washington, burning anything in a barrel is illegal. Here are some examples of illegal fires the Burn Team responds to as part of their daily work:

Some of the materials burned in illegal fires include plastics, metals, trash of all kinds, and demolition and construction debris.



Trash is often dumped into ditches and illegal dumps are created. A common method of disposal in the past was burning. With education and better alternatives, Ecology hopes people will dispose of their garbage through legal means.

Many people believe burning in a barrel is safer. In truth, the barrel prevents enough oxygen from reaching the fire, which creates more air pollution.



In 2008, complaints about burning consisted of:

- burning prohibited materials (56 percent of complaints);
- burning during a burn ban (36 percent of complaints);
- burning materials in/from an Urban Growth Area (32 percent of complaints);
- not abiding by conditions of a burn permit (24 percent of complaints);
- burning without a permit (20 percent of complaints);and
- burning in a burn barrel (8 percent of complaints).

Many of the enforcement actions involved multiple violations of the Washington Clean Air Act.

Ecology's Central and Eastern Regional Agricultural and Outdoor Burn Units issued 75 enforcement actions during 2008:

**2008 Agricultural and Outdoor Burning Enforcements
Ecology's Central & Eastern Regions**

	Notices of Correction	Notices of Violation	Civil Penalty	Penalty Amount (total)
Agricultural	6	3	3	\$11,500
Outdoor	41	19	3	\$11,000

The Future

Washington's air quality is extremely important to the health of our citizens and the environment. Ecology's Agricultural and Outdoor Burn Team continues to protect air quality using the tools available to us. We continue to learn and observe, to educate and assist, and when necessary, to initiate enforcement actions when all other avenues of gaining compliance have been exhausted.