



Garbage Burning In Rural Minnesota

**Interviews with residents about health,
environmental, legal, enforcement and safety concerns
regarding burning of garbage and household waste**

Key Findings Report

Prepared For:

**Minnesota Pollution Control Agency
Minnesota Solid Waste Administrators Association**

June 2010

Zenith Research Group – Duluth, Minnesota

Introduction

The attached report summarizes our research, analysis and findings concerning garbage and household waste disposal methods in rural Minnesota, and the awareness among the rural population to health, environmental, legal, enforcement and safety concerns related to open or backyard burning of household wastes. The findings of this study are based on the results of 897 interviews completed with residents of more than 550 communities in eighty of Minnesota's eighty-seven counties.

Similar research was first conducted by Zenith Research Group, Inc., in 2005 for the Minnesota Office of Environmental Assistance. This initial research served as a baseline for the current study; as such, results from that study are offered within the content of this report for comparative purposes. A group of respondents from the 2005 study who were self-identified at the time as garbage burners were contacted for this current research. The current findings from this select group are contained in a separate report.

The report analysis and findings are based on survey results using a questionnaire and methodology developed by Zenith Research Group, Inc., with the assistance and approval of representatives of the Minnesota Pollution Control Agency (MPCA) and members of an advisory group comprised of representatives from the Minnesota Solid Waste Administrators Association..

This project was made possible through a MPCA grant awarded to Zenith Research Group, Inc., with matching funds from the Solid Waste Administrators Association.

Zenith Research Group, Inc., shall have no liability for any representations (expressed or implied) contained in, nor for any omissions from, the report.

The information, analysis and findings provided within this report are intended solely to assist the agencies in determining the extent to which open or backyard burning of garbage and household waste is being practiced in the state, and evaluating the awareness level of rural residents in Minnesota to concerns about open or backyard burning.

As such, the information within should not be relied upon for any purpose nor distributed to nor relied upon by any third parties who are not negotiating directly with the Minnesota Pollution Control Agency or the Solid Waste Administrators Association.

Methodology

The findings of this study are based on the results compiled from 897 interviews completed with residents of more than 550 communities in eighty of Minnesota's eighty seven counties. A determination to exclude residents of seven counties in the greater metropolitan area of Minneapolis-St. Paul was made prior to the commencement of the project.

Prior to the interview process, Zenith Research Group, Inc., obtained a listing of state residents. The data was organized and segmented to aggregate those residents living in rural areas of Minnesota – those persons whose address was known to be within the boundaries of one of the state's 1,790 townships. Persons with a city address were eliminated from the survey process. All persons without a listed telephone number were also rejected.

The selection of respondents was made using a systematic sampling method, whereby a definite pattern was applied in choosing the potential respondent.

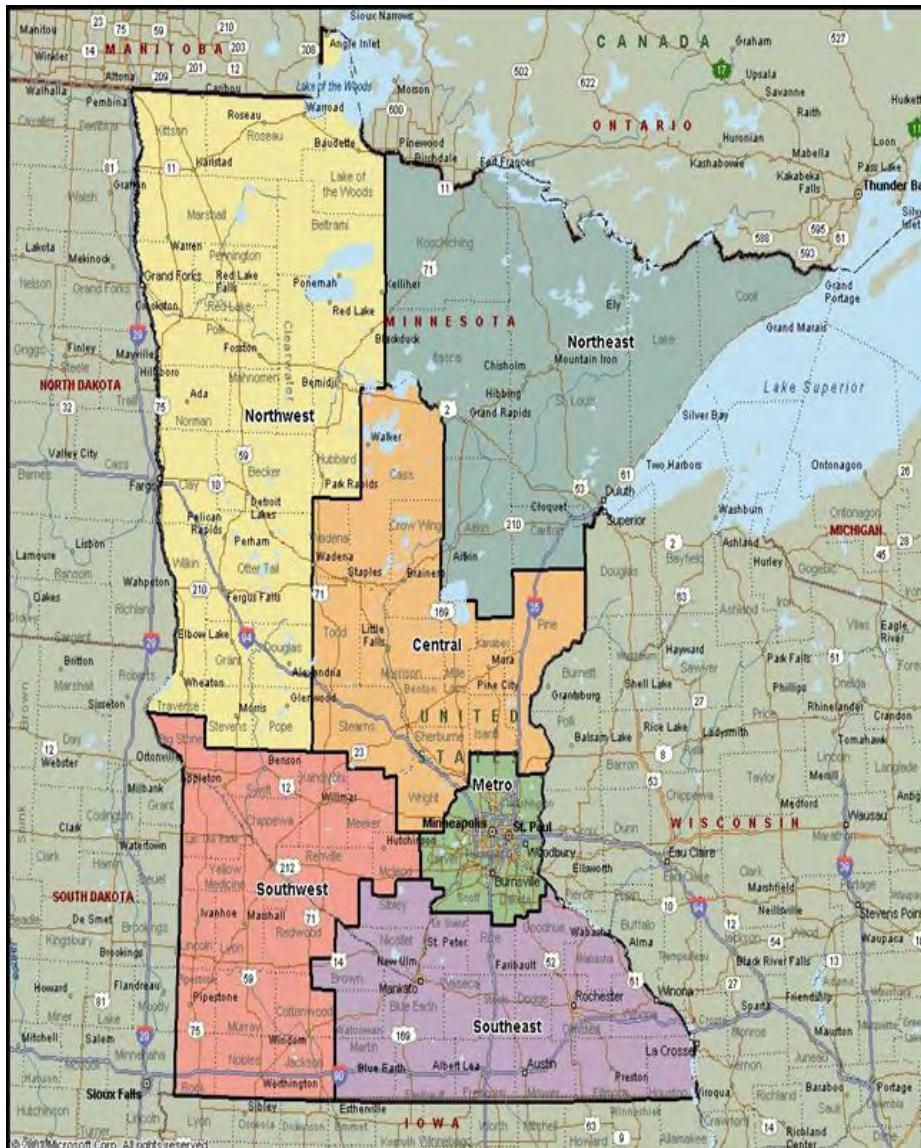
The number of calls completed within each of the eighty counties was determined based on previous experience and the percentage of rural residents within each of the counties. This determination was based on 2010 U.S. Census Bureau projections for Minnesota.

Overall, the margin of sampling error is +/-3.27 percent at the 95 percent confidence level.

All surveys were tabulated and analyzed using the statistical tools and applications of SPSS Analytical Software.

The summary analysis was completed by Dushan Skorich, President of Zenith Research Group, Inc.

Methodology



Minnesota Regions of Interest Margin of Error (MOE) Within Region					
Minnesota Region	Rural Contacts	Complete Interviews	Margin of Error	% of Total	2005 % of Total
Northwest	79999	156	+/- 7.84%	17.4	16.5
Northeast	68574	125	+/- 8.76%	13.9	14.1
Central	148589	230	+/- 6.46%	25.6	27.7
Southwest	48185	130	+/- 8.58%	14.5	12.5
Southeast	90618	256	+/- 6.12%	28.5	29.1
TOTAL	435965	897	+/- 3.27%	100	100

Of Interest

With the increased number of completed interviews from 834 in 2005 to the current 897, the margin of error within each region was slightly improved, as was the overall margin of error; in 2005 the margin of error was +/- 3.39 percent at the 95 percent confidence level compared with the current level of +/- 3.27 percent.

According to the Minnesota Department of Administration and U.S. Census Bureau 2009 estimates, of the state's 5,266,214 residents, 2,870,250 or 54.5 percent live within the seven-county metropolitan area – counties in the metropolitan area include: Anoka, Carver, Dakota, Hennepin, Ramsey, Scott and Washington.

Of the remaining 45.5 percent (2,395,694), the Department of Administration estimates that 58.7 percent (1,406,189) would be classified as rural residents. The U.S. Census Bureau and the Department of Administration's rural classification is extended to those residents living in open country or rural settlements with a population of less than 2,500 people.

For this survey, Zenith Research Group more closely defined the classification of rural and attempted to select only those residents with a Rural Route postal address or persons identified as living in one of the state's townships within the non-metro area.

Using the Department of Administration's criteria, 26.7 percent of the state's population was eligible to be interviewed. The percentage utilizing the criteria of Zenith Research Group would have been more conservative as noted in the rural contact list in the above chart.

Methodology

MINNESOTA REGIONS OF INTEREST									
NORTHWEST		NORTHEAST		CENTRAL		SOUTHWEST		SOUTHEAST	
COUNTY	INTERVIEWS	COUNTY	INTERVIEWS	COUNTY	INTERVIEWS	COUNTY	INTERVIEWS	COUNTY	INTERVIEWS
Becker	13	Aitkin	7	Benton	9	Big Stone	5	Blue Earth	21
Beltrami	9	Carlton	8	Cass	18	Chippewa	7	Brown	10
Clay	9	Cook	5	Chisago	16	Cottonwood	5	Dodge	7
Clearwater	5	Itasca	11	Crow Wing	19	Jackson	6	Faribault	8
Douglas	11	Koochiching	6	Isanti	16	Kandiyohi	14	Fillmore	7
Grant	5	Lake	7	Kanabec	8	Lac Qui Parle	5	Freeborn	14
Hubbard	7	Saint Louis	80	Mille Lacs	5	Lincoln	4	Goodhue	17
Kitson	6			Morrison	15	Lyon	8	Houston	6
Lake of the Woods	4			Pine	9	McLeod	13	Le Sueur	10
Mahnomen	5			Sherburne	15	Meeker	9	Martin	8
Marshall	8			Stearns	41	Murray	6	Mower	14
Norman	4			Todd	11	Nobles	7	Nicollet	12
Otter Tail	20			Wadena	6	Pipestone	6	Olmsted	45
Pennington	4			Wright	22	Redwood	8	Rice	18
Polk	14					Renville	8	Sibley	9
Pope	5					Rock	5	Steele	11
Red Lake	3					Swift	6	Wabasha	9
Roseau	7					Yellow Medicine	5	Waseca	6
Stevens	5							Watonwan	4
Traverse	4							Winona	17
Wilkin	5								

Of Interest

A small group of interviews (32) are not represented in the county lists above due to internal coding errors. While all other respondent data is complete within the individual regions, a few select county codes were either deleted or unrecorded during the interview process.

Call Center Data

		<u>Of Interest</u>
➤ Completed Surveys	897	
➤ Partial Surveys	93	Interviewing of respondents was conducted by Zenith Research Group, Inc. All interviews were conducted between 5:00pm and 9:00pm during the period May 13 – 28, 2010.
➤ Not Interested	204	Interviews with the group of self-identified burners from the 2005 study were completed between May 26 – June 5, 2010. All interviews were completed from the Zenith Research Group facility in Duluth, Minnesota.
➤ Does Not Do Surveys	63	
➤ No Reason/Other	141	
➤ Not Qualified	23	
➤ Not of Age	12	Only persons speaking from their residence were interviewed. Only one person was interviewed in each household.
➤ Other Reason	11	
➤ Incomplete Contacts	16629	
➤ Busy Signal	1182	
➤ No Answer	6797	
➤ Answering Machine	6935	
➤ Phone Problem Redial	547	
➤ Decision Maker Unavailable/Other	1168	
➤ Unusable Records	5232	
➤ Language Barrier	20	
➤ Call Blocker	292	
➤ Refused / Hung Up	2151	
➤ Wrong Number	310	
➤ Disconnected Number	2314	
➤ Take Off List	70	
➤ Work Number	75	

Demographics

RESPONDENT AGE

AGE	PERCENT	CUMULATIVE
18 TO 24	6.2	6.2
25 TO 34	10.3	16.5
35 TO 44	14.3	30.8
45 TO 54	21.7	52.5
55 TO 64	23.9	76.4
65 TO 74	14.2	90.5
75 OR OLDER	3.9	94.4
REFUSED	5.6	100.0

AGE	STATE REGION – Age in Percentage				
	NW	NE	CE	SW	SE
18 TO 24	2.6	8.0	5.7	5.4	8.6
25 TO 34	9.6	8.0	13.0	6.9	10.9
35 TO 44	14.7	8.8	13.0	20.8	14.5
45 TO 54	21.2	20.8	20.4	22.3	23.4
55 TO 64	28.8	24.0	22.6	26.9	20.3
65 TO 74	14.7	16.0	13.5	13.1	14.1
75 OR OLDER	4.5	4.8	3.5	3.1	3.9
REFUSED	3.8	9.6	8.3	1.5	4.3

RESPONDENT SEX

SEX	PERCENT
MALE	40.1
FEMALE	59.9

SEX	STATE REGION – Sex in Percentage				
	NW	NE	CE	SW	SE
MALE	35.9	38.4	41.7	40.8	42.2
FEMALE	64.1	61.6	58.3	59.2	57.8

Demographics

PEOPLE IN HOUSEHOLD

PEOPLE IN HOUSEHOLD - In Percentage				
1	2	3	4+	NA
7.7	48.5	14.0	28.8	1.0

RESIDENCE STATUS

OWN	RENT	NA
91.0	6.9	2.1

MARITAL STATUS

STATUS	PERCENT
NEVER MARRIED	13.6
MARRIED	76.9
COMMITTED RELATIONSHIP	2.3
DIVORCED	2.6
WIDOWED	3.0
REFUSED	1.8

FARM RESIDENT

TOTAL YES		STATE REGION – Results in Percentage									
		NW		NE		CE		SW		SE	
2010	2005	2010	2005	2010	2005	2010	2005	2010	2005	2010	2005
30.4	29.9	27.6	34.1	7.2	5.9	22.6	16.9	53.1	42.3	39.1	46.1

Of Interest

The percentage of respondents who still live on a farm that is still in operation in Minnesota was virtually unchanged from the level in 2005.

Over 53 percent of all respondents from southwest Minnesota still live on an operating farm.

Demographics

RESIDENCE LOCATION

LOCATION	STATE REGION – Location In Percentage					
	ALL	NW	NE	CE	SW	SE
RURAL	77.1	84.6	77.6	69.1	79.2	78.5
SEMI-RURAL	14.6	10.3	10.4	22.2	12.3	13.7
WITHIN CITY	7.4	4.5	8.8	8.7	7.7	7.0
OTHER	0.9	0.6	3.2	0	0.8	0.8

Of Interest

Almost 92 percent of all respondents lived in an area they described as rural or semi-rural.

More than 85 percent of all respondents said they lived in an area with a population of 5,000 or less. While the numbers are few, those in larger population centers likely moved to those areas after their personal data was collected.

COMMUNITY SIZE

POPULATION	STATE REGION – Population in Percentage					
	ALL	NW	NE	CE	SW	SE
LESS THAN 1000	62.5	71.8	69.6	55.7	63.1	59.4
1001 TO 5000	22.7	18.6	19.2	27.8	28.5	19.5
5001 TO 10000	5.2	5.1	4.8	9.1	1.5	3.9
10001 TO 20000	3.9	3.2	2.4	3.0	6.2	4.7
20001 TO 35000	1.0	0.6	0.8	0.9	0.8	1.6
35001 TO 50000	0.8	0	0.8	0	0	2.3
50001 TO 75000	0.8	0	0.8	1.7	0	0.8
75001 TO 100000	1.3	0	1.6	0.9	0	3.1
MORE THAN 100000	1.7	0.6	0	0.9	0	4.7

Demographics

EDUCATION LEVEL

HIGHEST EDUCATION LEVEL	STATE REGION – Education in Percentage					
	ALL	NW	NE	CE	SW	SE
LESS THAN HIGH SCHOOL	2.1	3.2	0.8	0.9	3.8	2.3
HIGH SCHOOL DEGREE/GED	31.5	33.3	32.0	34.3	33.1	27.0
2-YEAR DEGREE	31.1	32.7	28.0	30.4	30.0	32.8
4-YEAR DEGREE	23.3	23.1	24.0	21.3	21.5	25.8
MASTER'S DEGREE OR HIGHER	11.8	7.1	15.2	13.0	11.5	12.1

EMPLOYMENT STATUS

STATUS	STATE REGION – Employment in Percentage					
	ALL	NW	NE	CE	SW	SE
FULL TIME	26.3	19.2	24.8	27.4	33.1	27.0
PART TIME	11.1	13.5	12.0	7.8	12.3	11.7
SELF EMPLOYED	17.6	21.2	11.2	16.5	20.8	18.0
RETIRED	28.2	34.0	41.6	28.3	18.5	23.0
STUDENT	2.1	0.6	2.4	3.5	1.5	2.0
HOMEMAKER	6.2	7.1	2.4	5.7	6.9	7.8
UNEMPLOYED	6.8	1.9	3.2	9.6	6.9	9.0
REFUSED	1.6	2.5	2.4	1.3	0	1.6

Demographics

HOUSEHOLD INCOME

COMBINED ANNUAL HH INCOME	STATE REGION – Income in Percentage					
	ALL	NW	NE	CE	SW	SE
LESS THAN \$20000	7.9	10.9	6.4	5.2	4.6	10.9
\$20001 TO \$35000	13.3	14.7	20.0	11.3	11.5	11.7
\$35001 TO \$50000	18.2	18.6	19.2	17.0	19.2	18.0
\$50001 TO \$75000	19.0	22.4	17.6	21.7	18.5	15.2
\$75001 TO \$100000	9.5	7.7	11.2	10.0	10.8	8.6
\$100001 TO \$150000	6.6	3.2	5.6	4.8	7.7	10.2
MORE THAN \$150000	2.6	0	2.4	2.2	3.8	3.9
REFUSED	23.1	22.4	17.6	27.8	23.8	21.5

FARM / NON-FARM INCOME

COMBINED ANNUAL HH INCOME	FARM / NON-FARM – Income in Percentage			
	FARM	CUMULATIVE	NON-FARM	CUMULATIVE
LESS THAN \$20000	10.8	10.8	10.1	10.1
\$20001 TO \$35000	15.7	26.5	17.9	28.0
\$35001 TO \$50000	28.9	55.4	21.4	49.4
\$50001 TO \$75000	21.6	77.0	26.0	75.4
\$75001 TO \$100000	10.3	87.3	13.2	88.6
\$100001 TO \$150000	7.8	95.1	8.9	97.5
MORE THAN \$150000	4.9	100.0	2.5	100.0

Of Interest

There is a higher level of income among respondents from southern Minnesota.

Respondents living on a farm were more likely to have a lower combined household income than non-farm respondents.

Key Findings: Garbage, Waste Disposal

Does your residence have garbage hauling service, do you dispose of your garbage and household waste at a nearby disposal site, or do you use some other method of disposal?

DISPOSAL METHOD	TOTAL 2010	TOTAL 2005	STATE REGION – Results in Percentage									
			NW		NE		CE		SW		SE	
			2010	2005	2010	2005	2010	2005	2010	2005	2010	2005
GARBAGE HAULING SERVICE	60.5	59.5	50.6	50.7	50.4	54.2	80.9	81.8	53.8	46.2	56.6	51.4
USE NEARBY DISPOSAL SITE	26.1	27.9	35.3	42.0	46.4	42.4	13.5	13.4	22.3	24.0	23.8	28.4
SOME OTHER METHOD	13.4	12.6	14.1	7.2	3.2	3.4	5.7	4.8	23.8	29.8	19.5	20.2

Of Interest

Disposal methods were virtually unchanged statewide between the levels recorded in 2005 and the current research. There were slight variations within regions of the state. As was the case in the 2005 study, respondents in the central portion of Minnesota were still more likely to use a garbage hauling service. In 2005 respondents from the southwest portion of the state were least likely to use a service; in the current research, those persons living in northeast Minnesota were least likely to have a garbage hauling service.

Approximately how much do you pay monthly to dispose of your garbage? N = 543

MONTHLY DISPOSAL FEE	2010	2005
\$20 OR LESS	35.7	43.1
\$21 TO \$25	20.1	20.8
\$26 TO \$30	15.1	9.5
MORE THAN \$30	29.1	11.7
OTHER	0	14.9

Of Interest

Rates for garbage hauling services have increased statewide since the 2005 study, with the largest increase noted for those respondents paying more than \$30 each month.

In 2005, a group of respondents indicated they were unaware of the cost, or indicated the cost was either included in their rent or paid by someone else.

Key Findings: Garbage, Waste Disposal

How many times each month do you use the disposal site? N = 234

DISPOSAL SITE USE	2010	2005
ONE TIME	44.9	31.3
TWO TIMES	20.9	29.2
THREE TIMES	10.7	3.9
FOUR TIMES OR MORE	23.5	20.6
OTHER	0	15.0

Of Interest

Current survey participants were limited in their response options unlike 2005 when additional answers were accepted. For the most part, there is more frequent use of disposal sites.

In each of the two surveys, 65 percent of all eligible respondents indicated a disposal site was within 10 miles of their home.

A majority of respondents living more than 11 miles from a disposal site were likely to make just a single trip to the site each month.

Approximately how far from your home is this disposal site? N = 234

DISPOSAL SITE MILEAGE	TOTAL 2010	TOTAL 2005	STATE REGION – Results in Percentage									
			NW		NE		CE		SW		SE	
			2010	2005	2010	2005	2010	2005	2010	2005	2010	2005
LESS THAN 5 MILES	29.1	33.9	34.5	43.1	27.6	30.0	22.6	22.6	24.1	32.0	31.1	34.8
5 TO 10 MILES	35.9	31.8	29.1	20.7	37.9	38.0	45.2	25.8	41.4	44.0	32.8	34.8
11 TO 20 MILES	27.3	24.9	29.1	31.0	22.4	26.0	25.8	35.5	24.1	4.0	32.8	21.7
MORE THAN 20 MILES	7.7	8.6	7.3	5.2	12.1	6.0	6.4	12.9	10.3	16.0	3.3	8.7
DISPOSAL SITE MILEAGE			TIMES SITE USED EACH MONTH									
			1		2		3		4+		OTHER	
			2010	2005	2010	2005	2010	2005	2010	2005	2010	2005
LESS THAN 5 MILES			32.4	27.8	22.1	25.3	4.4	5.1	41.2	32.9	0	8.9
5 TO 10 MILES			40.5	31.1	27.4	35.1	13.1	5.4	19.0	17.6	0	10.8
11 TO 20 MILES			60.9	31.0	12.5	34.5	12.5	0	14.1	8.6	0	25.9
MORE THAN 20 MILES			55.6	50.0	16.7	10.0	16.7	5.0	11.1	15.0	0	20.0

Key Findings: Garbage, Waste Disposal

If this facility was closer, would you use it more often? N = 234

DISPOSAL SITE USE	2010	2005
YES	20.9	24.0
NO	69.2	69.5
N/A	9.8	6.4

Of Interest

Possible use based on site proximity was largely unchanged from the 2005 results.

Key Findings: Home Burning

Do you use a burn barrel, fire-pit, fireplace, wood stove, incinerator or any other such method to dispose of your garbage or household waste, including paper products?

BURN GARBAGE / WASTE	2010	2005	CHANGE
YES	23.5	44.6	-21.1
SOMETIMES, NOT ALWAYS	9.1	0	+9.1
NO	67.3	55.4	+11.9

Of Interest

Overall, just under 33 percent of all respondents indicated they likely to use some burn device to dispose of their garbage or household waste. In 2005, only "yes" and "no" responses were collected.

BURN GARBAGE / WASTE	STATE REGION – Results in Percentage									
	NW		NE		CE		SW		SE	
	2010	2005	2010	2005	2010	2005	2010	2005	2010	2005
YES	25.6	38.4	9.6	35.6	13.9	29.9	37.7	64.4	30.5	58.0
SOMETIMES, NOT ALWAYS	10.9	0	7.2	0	7.4	0	13.8	0	8.2	0
NO	63.5	61.6	83.2	64.4	78.7	70.1	48.5	35.6	61.3	42.0
GARBAGE DISPOSAL METHOD										
BURN GARBAGE / WASTE	GARBAGE HAULING SERVICE		NEARBY DISPOSAL SITE		OTHER		FARM		NON-FARM	
	2010	2005	2010	2005	2010	2005	2010	2005	2010	2005
YES	9.8	24.8	29.1	67.4	75.0	87.6	45.1	72.0	14.1	0
SOMETIMES, NOT ALWAYS	7.2	0	12.8	0	10.8	0	9.9	0	9.2	0
NO	83.1	75.2	58.1	32.6	14.2	12.4	45.1	28.0	77.0	0

Of Interest

Those respondents from southwest Minnesota were still more likely than residents of other regions to have used one of the burn devices, and the southwest is the only region of the state where a majority of respondents were likely to do so, if only occasionally. There have been noticeable improvements among those with varying disposal methods (see results on page 11) and among farm families; non-farm families were not analyzed in the 2005 study.

Key Findings: Home Burning

Do you use a burn barrel, fire-pit, fireplace, wood stove, incinerator or any other such method to dispose of your garbage or household waste, including paper products?

BURN GARBAGE / WASTE	AGE – Results in Percentage													
	18-24		25-34		35-44		45-54		55-64		65-74		75+	
	2010	2005	2010	2005	2010	2005	2010	2005	2010	2005	2010	2005	2010	2005
YES	28.6	58.3	20.7	40.6	29.7	45.0	23.1	41.3	23.8	42.0	20.5	50.4	14.3	52.5
SOMETIMES, NOT ALWAYS	8.9	0	9.8	0	11.7	0	5.6	0	8.9	0	14.2	0	8.6	0
NO	62.5	41.7	69.6	59.4	58.6	55.0	71.3	58.7	67.3	58.0	65.4	49.6	77.1	47.5
MONTHLY GARBAGE FEE														
BURN GARBAGE / WASTE	LESS THAN \$20		\$21 TO \$25		\$26 TO \$30		MORE THAN \$30		Of Interest					
	2010	2005	2010	2005	2010	2005	2010	2005	2010	2005	2010	2005	2010	2005
YES	9.8	22.4	10.1	21.4	4.9	21.3	12.0	36.2	Among age groups, only those between 35-44 years of age had a "no" response of less than 60 percent. Among those with garbage service, the percentage of non-burners exceeded 80 percent in each of the monthly fee groups.					
SOMETIMES, NOT ALWAYS	6.7	0	6.4	0	12.2	0	5.7	0						
NO	83.5	77.6	83.5	78.6	82.9	78.7	82.3	63.8						
LEVEL OF EDUCATION														
BURN GARBAGE / WASTE	LESS THAN HIGH SCHOOL		HIGH SCHOOL DEGREE		2-YEAR DEGREE		4-YEAR DEGREE		MASTER'S DEGREE OR HIGHER		Of Interest			
	2010	2005	2010	2005	2010	2005	2010	2005	2010	2005	2010	2005	2010	2005
YES	31.6	50.0	22.6	49.8	29.4	42.7	20.1	38.0	16.0	40.6	Those respondents with less than a high school education were still more likely than other groups to burn their garbage or household waste.			
SOMETIMES, NOT ALWAYS	10.5	0	9.2	0	8.2	0	11.0	0	7.5	0				
NO	57.9	50.0	68.2	50.2	62.4	57.3	68.9	62.0	76.4	59.4				

Key Findings: Home Burning

Do you use a burn barrel, fire-pit, fireplace, wood stove, incinerator or any other such method to dispose of your garbage or household waste, including paper products?

BURN GARBAGE / WASTE	ANNUAL HOUSEHOLD INCOME – Results in Percentage													
	LESS THAN \$20K		\$20K - \$35K		\$35K - \$50K		\$50K – 75K		\$75K - \$100K		\$100K - \$150K		MORE THAN \$150K	
	2010	2005	2010	2005	2010	2005	2010	2005	2010	2005	2010	2005	2010	2005
YES	26.8	46.3	26.1	62.0	25.8	46.8	22.9	39.6	18.8	38.2	10.2	40.5	21.7	50.0
SOMETIMES, NOT ALWAYS	8.5	0	16.8	0	8.0	0	10.6	0	7.1	0	3.4	0	8.7	0
NO	64.8	53.7	57.1	38.0	66.3	53.2	66.5	60.4	74.1	61.8	86.4	59.5	69.6	50.0

Of Interest

Those persons from households with incomes between \$20,000 - \$35,000 were most likely to burn portions of their garbage or household waste; this was the only income group with a “no” response below 60 percent.

Key Findings: Home Burning

Which of the following have you used to burn waste?

BURN DEVICE	2010	2005
BURN BARREL	63.4	52.7
STOVE	12.5	17.5
INCINERATOR	2.0	3.2
FIREPLACE	3.4	3.5
FIRE-PIT	29.1	30.6
OUTDOOR WOOD FURNACE/BOILER	7.8	0

Of Interest

Among those respondents who indicated they use a burn device, most were likely to use a burn barrel.

What is the primary reason you burn some of your garbage or household waste?

PRIMARY BURN REASON	2010	2005
CONVENIENCE	22.7	27.7
EXPENSIVE GARBAGE SERVICE	7.1	8.6
DROP-OFF DISTANCE	2.0	1.3
NO PICK-UP SERVICE	10.9	9.2
REDUCE WASTE	10.2	8.9
SAVE MONEY	7.1	4.2
ONLY BURN CERTAIN ITEMS	15.2	17.3
HAVE ALWAYS BURNED	6.7	2.1
PRIVACY-PAPERS	11.2	6.3
HEAT	5.5	6.0

Of Interest

Those respondents who use a burn device for garbage or household waste were likely to indicate they do so "to get rid of it," citing its "convenience." Many indicated they only burn certain items, particularly paper products and personal papers to protect their privacy. Others indicated the lack of – or cost of – garbage hauling service, distance to a disposal site, a heat source and the fact they've always burned as reasons.

Key Findings: Home Burning

Which of the following do you burn – or have you burned?

MATERIALS BURNED	2010	2005
LEAVES OR OTHER YARD WASTE	57.7	38.2
CONSTRUCTION MATERIALS SUCH AS WOOD SCRAPS, SINGLES, INSULATION OR PLASTIC PIPING	21.5	25.8
CARDBOARD	61.8	52.7
PLASTIC PACKAGING	26.6	26.6
PLASTIC CONTAINERS SUCH AS SODA BOTTLES, YOGURT CUPS, KETCHUP BOTTLES	12.6	13.2
PAPER PRODUCTS INCLUDING JUNK MAIL OR PRIVATE PERSONAL PAPERS	84.3	83.9

Of Interest

There was almost a 20 point difference in the percentage of respondents who indicated they have burned leaves or other yard waste; an increase was also noted in respondents who have burned cardboard.

Percentages for the burning of other items were virtually unchanged from the 2005 survey.

Approximately how many standard 30 gallon trash bags worth of garbage or waste might you typically burn in an average week?

BAGS BURNED	2010	2005
LESS THAN ONE	60.7	36
ONE	23.5	38
TWO	10.9	10
THREE OR MORE	4.8	X

Of Interest

Almost 61 percent of those respondents who burn garbage or household waste indicated they burn less than one 30-gallon trash bag of material each week.

In 2005 responses were in verbatim form and quantified during analysis. As such, responses were more varied.

How many times each week do you typically burn your garbage or household waste?

TIMES BURNED	2010	2005
EVERY DAY	1.0	6
ONCE-TWICE	43.0	X
THREE-FOUR	1.4	X
VARIES	54.6	X

Of Interest

43 percent of the admitted burners indicated they burn once or twice each week.

In 2005 responses were in verbatim form and, except for the “every day” response, do not correlate to the current structure of the responses (noted by X).

Key Findings: Home Burning

Which time of the year are you most likely to burn?

SEASON BURNED	2010	2005
SPRING	5.8	4.3
SUMMER	4.4	5.9
FALL	2.7	6.2
WINTER	8.2	16.9
NO PARTICULAR TIME-VARIES	78.8	66.7

Of Interest

While burning increases during the winter season, 79 percent of those who said they burn do so year round.

Do you know of anyone else who also uses a burn barrel or other method to burn their garbage or household waste?

OTHER BURNERS	2010	2005
YES	52.2	50.5
NO	47.8	46.2

Of Interest

The results were virtually unchanged from the findings in the 2005 survey.

What, if anything, would cause you to choose another way of getting rid of your garbage rather than burning?

STOP BURNING	2010	2005
CHEAPER HAULING RATES	18.1	15.5
GARBAGE SERVICE	17.7	16.9
BETTER RECYCLING	5.2	6.9
LEGAL ISSUES	2.6	1.4
CLOSER DROP-OFF	7.3	2.8
NOTHING – WILL NOT STOP	40.7	48.2

cheaper
compost pickup city
garbage burn
available shredder miles
picked way area free
maybe make
take probably services
disposal closer
affordable pick-up
know personal get disposal

Of Interest

Those who currently burn indicate they might stop if garbage service was available at a reasonable cost – many are not inclined to stop burning.

Key Findings: Non-Burners

Have you ever burned your garbage or household waste?

BURNING HISTORY	TOTAL		STATE REGION – Results in Percentage									
			NW		NE		CE		SW		SE	
	2010	2005	2010	2005	2010	2005	2010	2005	2010	2005	2010	2005
YES	35.1	29.7	37.4	37.6	31.7	18.4	29.3	22.8	55.6	24.3	34.4	44.1
NO	64.9	70.3	62.6	62.4	68.3	81.6	70.7	77.2	44.4	75.7	65.6	55.9

Of Interest

Among the group of respondents who had earlier indicated they do not use a burn device to dispose of garbage or household waste, 35 percent said they had at some other time engaged in the burning practice. A majority of respondents from the southwest portion of the state indicated they had burned at some point in the past.

Among respondents who still live on a farm in Minnesota, but do not use a burn device, 53.7 percent said they used to burn their garbage or household waste; in 2005 just over 50 percent of this group said they used to burn. Just over 30 percent of non-farm respondents who do not burn indicated they had burned at some time in the past.

Why did you stop?

REASON	2010	2005
OTHER DISPOSAL METHODS	34.2	31.8
LEGAL REASONS / CONCERNS	16.8	21.5
ENVIRONMENTAL CONCERNS	18.9	11.8
LIFESTYLE CHANGES	0	11.1
CHANGE IN RESIDENCE	12.7	8.9
FIRE DANGER CONCERNS	1.5	5.3
OTHER	15.8	9.6



Of Interest

Respondents who used to burn indicated they switched to other forms of garbage disposal and had more concerns about legal and environmental issues.

Key Findings: Seasonal Property Owners

Do you own any seasonal or recreational property in Minnesota? (Includes cabin, hunting land, lake home)

SEASONAL PROPERTY	TOTAL		STATE REGION – Results in Percentage									
			NW		NE		CE		SW		SE	
	2010	2005	2010	2005	2010	2005	2010	2005	2010	2005	2010	2005
YES	10.7	6	11.5	5.8	16.8	10.2	14.8	6.9	8.5	3.8	4.7	4.9
NO	89.3	94	88.5	94.2	83.2	89.9	85.2	93.1	91.5	96.2	95.3	95.1

Of Interest

With the exception of southeast Minnesota, the percentage of seasonal or recreational property owners was higher in all regions of the state.

Which of the following methods do you use to dispose of garbage at this property?

DISPOSAL METHOD	PCT
GARBAGE HAULING SERVICE	24.0
NEARBY DISPOSAL SITE	35.4
BRING GARBAGE HOME	40.6
BURN SOME/ALL OF WASTE	7.3

Of Interest

Just over 7 percent of the seasonal property owners indicated they burn some or all the waste generated during their visit to the property.

In 2005 respondents were asked to select one of the options; in this survey all response options were available for selection.

In the 2005 study 40.4 percent indicated they bring the garbage home with them.

Key Findings: Seasonal Property Owners

Do you ever use any of these methods to dispose of your garbage or waste generated at the property?

BURN DEVICE	PCT
BURN BARREL	7.3
STOVE	1.0
INCINERATOR	0
FIREPLACE	0
FIRE-PIT	6.2
OUTDOOR WOOD FURNACE / BOILER	1.0

Of Interest

Among all seasonal property owners burn barrels or fire-pits were most often used to dispose of garbage or waste by burning.

What is the primary reason you burn your garbage or waste at this property?

Of Interest

Among the few people who admitted burning convenience was most often noted as the reason.

Key Findings: Business Owners

Do you own a business that operates at a site other than your home?

BUSINESS OWNER	TOTAL	
	2010	2005
YES	7.5	5.5
NO	92.5	94.5

Which of the following methods do you use to dispose of your garbage at this property?

DISPOSAL METHOD	2010	2005
GARBAGE HAULING SERVICE	72.1	73.9
NEARBY DISPOSAL SITE	14.7	15.2
SOME OTHER METHOD	13.2	8.7

Of Interest

Variations from the 2005 study were largely unchanged. The 2005 totals do not include the percentage of those business owners who did not respond to this question.

Which of the following methods do you use to dispose of your garbage at this property?

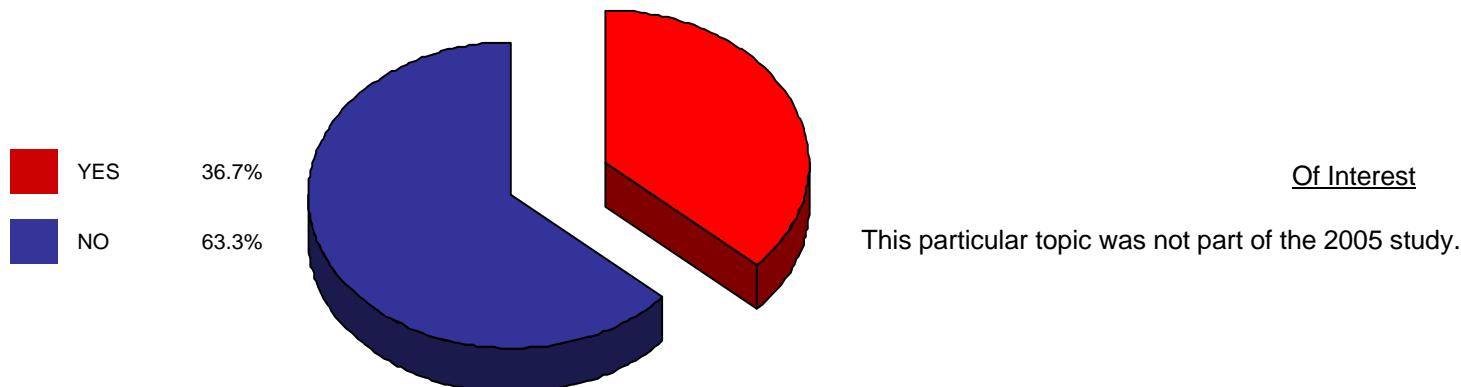
BURN DEVICE	2010	2005
BURN BARREL	6.0	4.3
STOVE	0	2.2
INCINERATOR	0	2.2
FIREPLACE	0	0
FIRE-PIT	4.5	2.2
OUTDOOR WOOD FURNACE / BOILER	0	0

Of Interest

Just 7 of the 67 business owners in the current survey said they use a burn device to dispose of garbage. They did not offer any specific reason for their action.

Key Findings: Information Impacts

Have you seen, heard or received any information on the effects of garbage burning?



Briefly describe the information you recall seeing, hearing or receiving?



Of Interest

Among those respondents who had some experience with information about the effects of burning many were aware of the environmental and pollution consequences it presents. Some offered specific examples while many others offered more generic comments.

Key Findings: Information Impacts

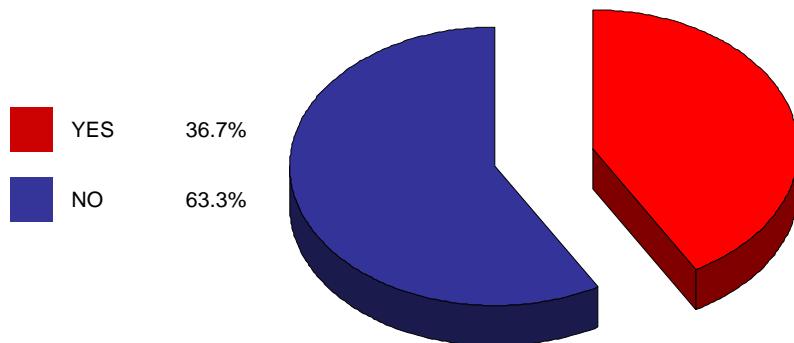
In what format was this information provided?

INFORMATION SOURCE	PCT
NEWSPAPER ADVERTISING	33.7
BROCHURE OR FLYER	36.5
BILLBOARD	6.4
RADIO	10.9
SCHOOL	5.8
PUBLIC EVENT	5.2
WEBSITE	5.2
OTHER	33.1

Of Interest

Publicly available literature was most often cited as the source for information about burning and its effects; although not specifically listed, television was another popular source for information.

Did the information have any influence on how you currently dispose of your garbage?



Key Findings: Information Impacts

What was the result?

INFORMATION INFLUENCE	PCT
NO CHANGE: NEVER BURNED GARBAGE	19.7
NO CHANGE: CONTINUED TO BURN GARBAGE	2.9
BURN LESS GARBAGE / BURN LESS FREQUENTLY	17.5
DISPOSAL OPTION UNAVAILABLE: CONTINUED TO BURN	2.9
STOPPED BURNING: NOW USE GARBAGE SERVICE	26.3
STOPPED BURNING: USE DROP-OFF SITE	21.2
TALKED WITH NEIGHBORS / FRIENDS WHO BURN	2.2
REPORTED GARBAGE BURNING TO AUTHORITIES	0
OTHER	24.1

Of Interest

More than 47 percent of those who said they had changed their garbage disposal pattern said they had stopped burning in favor of garbage service or use of a drop-off site. Additionally, although not listed as an option, almost half of those offering a different response said they had either started recycling or increased their recycling.

If the information did not change your behavior, why not?

INFORMATION INFLUENCE	PCT
COST OF COLLECTION SERVICE IS TOO EXPENSIVE	4.9
COLLECTION SERVICE IS NOT AVAILABLE	6.4
COLLECTION DROP-OFF SITE IS NOT AVAILABLE	0.9
COLLECTION DROP-OFF SITE IS TOO FAR AWAY	1.8
IT'S CONVENIENT TO BURN GARBAGE OR WASTE	5.2
I DON'T BELIEVE BURNING IS A PROBLEM	6.4
NEVER BURNED GARBAGE OR WASTE	41.6
OTHER	29.5

Of Interest

Among respondents who said information about the effects of burning did not change their behavior many indicated they previously did not burn or had already begun to recycle larger portions of their garbage. A few individuals did indicate that they burn lesser amounts.

Key Findings: Recycling

Which of the following materials does your household recycle?

RECYCLED MATERIALS	TOTAL		STATE REGION – Results in Percentage									
			NW		NE		CE		SW		SE	
	2010	2005	2010	2005	2010	2005	2010	2005	2010	2005	2010	2005
PAPER	71.1	68.3	59.6	64.5	77.6	72.0	67.4	66.7	77.7	63.5	75.0	72.4
CANS	88.1	86.3	78.8	81.2	88.8	86.4	85.2	83.5	93.8	89.4	93.0	90.5
PLASTICS	80.4	71.9	67.9	68.8	78.4	78.0	79.6	64.1	88.5	72.1	85.5	78.2
GLASS JARS / BOTTLES	78.5	74.1	69.9	70.3	76.0	74.6	74.3	67.5	87.7	77.9	84.0	80.7
OTHER	8.9	27.4	8.3	X	4.0	X	3.9	X	7.7	X	16.8	X
DON'T RECYCLE	8.4	X	15.4	X	9.6	X	7.4	X	6.9	X	5.1	X

Of Interest

Recycling of each of the listed items was higher than the levels reported in the 2005 study.

Recycling was higher in four of the state's five regions surveyed; levels in the northwest dropped from the 2005 study.

Cardboard was the most often mentioned additional item that respondents were likely to recycle.

Respondents in the 2005 survey were not asked if they did not recycle (noted with X).

Key Findings: Burning Concerns

Rank the following concerns that have been raised about garbage burning in order of importance.

BURNING CONCERNS	MEAN SCORE		FIRST		SECOND		THIRD		FOURTH	
	2010	2005	2010	2005	2010	2005	2010	2005	2010	2005
AIR / GROUNDWATER POLLUTION	1.75	2.13	53.7	28.8	25.1	36.2	13.7	21.6	7.5	10.0
FIRE DANGER	2.37	2.40	23.9	33.2	31.5	14.6	28.0	26.0	16.6	23.3
HEALTH RISKS	2.54	2.30	14.0	28.3	30.9	27.5	41.8	24.7	13.3	16.1
ODOR / SMELL	3.33	3.17	8.4	7.4	12.5	17.0	16.5	23.5	62.7	48.6

Of Interest

The respondents ranking about the concerns over air and groundwater pollution was higher than the level recorded in 2005 when it was also the number one concern.

Fire danger was ranked third in the 2005 survey, but is now ranked second ahead of health risks.

Concerns about odor and smell still trail the others.

The Mean Score is the central tendency or the sum of all rankings divided by the number of cases. In the case above, a score of 1 was applied to the first ranking and a 4 was applied to the fourth ranking.

Key Findings: Burning Concerns

Rank the following concerns that have been raised about garbage burning in order of importance.

BURNING CONCERNS	RESIDENTIAL RESPONDENTS WHO BURN							
	FIRST		SECOND		THIRD		FOURTH	
	2010	2005	2010	2005	2010	2005	2010	2005
AIR / GROUNDWATER POLLUTION	46.9	29.3	26.1	34.1	17.1	21.0	10.0	10.2
FIRE DANGER	28.9	37.1	30.8	12.1	24.6	23.9	15.6	23.1
HEALTH RISKS	12.8	23.4	29.9	29.3	43.6	24.2	13.7	18.0
ODOR / SMELL	11.4	6.7	13.3	18.0	14.7	24.7	60.7	45.4
BURNING CONCERNS	FARM RESIDENTS							
	FIRST		SECOND		THIRD		FOURTH	
	2010	2005	2010	2005	2010	2005	2010	2005
AIR / GROUNDWATER POLLUTION	49.1	30.1	26.7	34.1	13.2	20.1	11.0	10.0
FIRE DANGER	26.4	36.5	26.7	9.2	31.1	26.1	15.8	22.9
HEALTH RISKS	14.3	22.5	33.3	30.9	40.7	21.7	11.7	19.7
ODOR / SMELL	10.3	5.6	13.2	18.1	15.0	25.3	61.5	45.8

Of Interest

Those persons living on a farm in Minnesota were slightly more likely than the respondent base who said they burned their garbage to rank air and groundwater pollution as the more serious concern associated with burning. Those who indicated they sometimes burn are not included in the 2010 percentages.

Key Findings: Burning Concerns

Burning garbage is a very serious problem – vs – Burning garbage is not a problem at all

ALL RESPONDENT COMPARISON									
VERY SERIOUS PROBLEM		SOMEWHAT SERIOUS PROBLEM		NEUTRAL		NOT MUCH OF A PROBLEM		NOT AT ALL A PROBLEM	
2010	2005	2010	2005	2010	2005	2010	2005	2010	2005
19.1	15.0	18.0	12.5	25.9	28.8	14.9	14.1	24.2	29.6
RESIDENTIAL RESPONDENTS WHO BURN									
9.0	10.8	9.0	8.1	23.7	26.8	22.3	14.6	36.0	39.7
FARM RESPONDENTS									
13.2	10.1	13.2	9.3	26.4	29.1	21.6	14.2	25.6	37.2
NORTHWEST									
16.0	14.5	14.7	10.1	24.4	31.2	10.9	10.9	34.0	33.3
NORTHEAST									
28.8	19.7	16.0	15.4	24.8	25.6	10.4	12.0	20.0	27.4
CENTRAL									
24.3	16.5	13.5	16.1	25.2	27.8	11.7	17.8	25.2	21.7
SOUTHWEST									
16.2	13.6	13.1	5.8	23.1	28.2	25.4	13.6	22.3	38.8
SOUTHEAST									
12.9	12.3	20.3	11.9	29.3	30.0	17.2	13.6	20.3	32.1

Of Interest

Those persons living on a farm were more likely than respondents who admitting burning to believe burning is a serious problem; the percentage of all respondents who think burning is not a serious problem is higher than the levels of 2005. Residents of northeast Minnesota were more likely to believe burning a serious problem; residents of the southwest and northwest were least likely to rank burning as a serious problem.

Key Findings: Enforcement

Burning of garbage and household waste is permitted in my area

RESPONDENT GROUP	TRUE		FALSE		UNCERTAIN	
	2010	2005	2010	2005	2010	2005
ALL RESPONDENTS	35.0	35.0	44.0	51.0	21.0	14.0
RESPONDENTS WHO BURN	64.5	55.6	16.1	31.7	19.4	12.6
FARM RESIDENTS	50.5	55.0	31.5	32.1	17.9	12.9
NORTHWEST	39.7	34.8	40.4	52.2	19.9	13.0
NORTHEAST	15.2	19.5	67.2	69.5	17.6	11.0
CENTRAL	23.5	15.6	57.0	64.9	19.6	19.5
SOUTHWEST	48.5	61.5	29.2	28.8	22.3	9.6
SOUTHEAST	45.3	49.8	30.9	37.4	23.8	12.8

Of Interest

The percentage of respondents who believe burning of garbage or waste is permitted is unchanged from 2005, although more people are uncertain about the truthfulness of the statement.

More than 64 percent of respondents who burn said burning is permitted.

Half of all farm residents believe burning is permitted in their area.

Respondents from southern Minnesota are more likely than residents elsewhere to believe burning is permitted in their area.

Garbage and household waste burning regulations are well enforced in my area

RESPONDENT GROUP	TRUE		FALSE		UNCERTAIN	
	2010	2005	2010	2005	2010	2005
ALL RESPONDENTS	31.1	45.7	36.5	29.4	32.4	24.9
RESPONDENTS WHO BURN	31.8	42.7	33.2	31.7	35.1	25.5
FARM RESIDENTS	29.2	44.2	37.6	32.9	33.2	22.9
NORTHWEST	28.8	53.6	39.1	26.8	32.1	19.6
NORTHEAST	26.4	43.2	40.0	33.9	33.6	22.9
CENTRAL	28.7	40.7	38.7	32.0	32.6	27.3
SOUTHWEST	40.0	48.1	30.8	25.0	29.2	26.9
SOUTHEAST	32.4	46.1	34.0	28.0	33.6	25.9

Of Interest

Respondents in all groups are less likely to believe regulations are well enforced in their area.

Key Findings: Enforcement

Burning of garbage and household waste is not a problem in my area

RESPONDENT GROUP	TRUE		FALSE		UNCERTAIN	
	2010	2005	2010	2005	2010	2005
ALL RESPONDENTS	62.1	68.6	18.8	25.5	19.1	5.9
RESPONDENTS WHO BURN	70.1	69.6	11.4	26.1	18.5	4.3
FARM RESIDENTS	65.6	65.1	14.7	28.5	19.8	6.4
NORTHWEST	66.0	65.2	16.7	29.7	17.3	5.1
NORTHEAST	52.8	66.9	27.2	27.1	20.0	5.9
CENTRAL	60.9	70.1	21.3	21.6	17.8	8.2
SOUTHWEST	61.5	73.1	16.9	25.0	21.5	1.9
SOUTHEAST	65.6	67.9	14.8	26.3	19.5	4.3

Of Interest

The percentage of respondents who believe burning is not a problem remained largely unchanged from 2005; there were far more respondents who were uncertain about the extent of the problem.

Key Findings: Awareness

Burning of garbage and household waste is illegal for people, with the exception of some farmers under certain circumstances

RESPONDENT GROUP	STRONGLY AGREE		AGREE		NEUTRAL		DISAGREE		STRONGLY DISAGREE	
	2010	2005	2010	2005	2010	2005	2010	2005	2010	2005
ALL RESPONDENTS	9.7	36.8	38.4	16.7	26.5	23.8	20.4	6.9	5.0	16.1
RESPONDENTS WHO BURN	8.5	34.7	29.9	13.3	29.9	23.9	24.6	8.9	7.1	19.2
FARM RESIDENTS	10.3	38.4	36.4	14.7	26.5	26.1	21.5	5.7	5.3	15.1
NORTHWEST	12.8	32.4	32.7	14.0	30.1	29.4	19.2	4.4	5.1	19.9
NORTHEAST	12.0	43.9	39.2	9.8	24.0	25.4	19.2	4.4	5.6	16.7
CENTRAL	7.4	31.6	42.6	20.4	20.9	23.6	23.5	10.7	5.7	13.8
SOUTHWEST	6.9	48.5	33.8	17.5	33.8	14.6	20.0	3.9	5.4	15.9
SOUTHEAST	10.2	35.3	39.8	17.6	27.0	23.9	19.1	7.1	3.9	16.0

Of Interest

The percentage of respondents who strongly believe burning is illegal is dramatically different from the results registered in the 2005 study. Overall, more than 53 percent of the 2005 respondents agreed with the statement compared with 48 percent in the current study.

Key Findings: Awareness

Burning garbage releases pollution that can harm wildlife, livestock, crops and the environment

RESPONDENT GROUP	STRONGLY AGREE		AGREE		NEUTRAL		DISAGREE		STRONGLY DISAGREE	
	2010	2005	2010	2005	2010	2005	2010	2005	2010	2005
ALL RESPONDENTS	23.5	45.5	50.3	19.9	13.3	15.7	11.4	7.5	1.6	11.4
RESPONDENTS WHO BURN	8.5	39.1	44.5	18.9	23.7	16.9	18.0	9.3	5.2	15.8
FARM RESIDENTS	15.0	36.7	45.1	18.0	19.4	17.6	17.6	9.8	2.9	18.0
NORTHWEST	23.1	42.3	44.2	22.6	16.7	19.0	14.1	5.8	1.9	10.2
NORTHEAST	29.6	69.6	53.6	12.2	8.0	9.6	7.2	5.2	1.6	3.5
CENTRAL	28.3	51.5	52.2	23.3	9.6	10.1	9.6	7.5	0.4	7.5
SOUTHWEST	17.7	40.8	45.4	21.4	21.5	12.6	13.8	7.8	1.5	17.5
SOUTHEAST	19.5	44.7	53.1	19.8	12.9	12.2	12.1	8.4	2.3	14.8

Of Interest

Overall, 74 percent of all respondents in the current research agreed with the statement compared with 65 percent of 2005 respondents.

Key Findings: Awareness

Burning garbage can release toxins that work their way into and can contaminate groundwater

RESPONDENT GROUP	STRONGLY AGREE		AGREE		NEUTRAL		DISAGREE		STRONGLY DISAGREE	
	2010	2005	2010	2005	2010	2005	2010	2005	2010	2005
ALL RESPONDENTS	23.2	49.2	52.0	20.4	13.4	12.5	10.8	7.2	0.7	10.7
RESPONDENTS WHO BURN	10.4	39.1	44.5	18.9	24.2	16.9	19.0	9.3	1.9	15.8
FARM RESIDENTS	26.5	36.7	53.8	18.0	11.1	17.6	8.2	9.8	0.5	18.0
NORTHWEST	23.1	42.3	42.3	22.6	17.3	19.0	17.3	5.8	0	10.2
NORTHEAST	35.2	69.6	48.8	12.2	8.8	9.6	6.4	5.2	0.8	3.5
CENTRAL	25.7	51.5	54.8	23.3	11.3	10.1	7.8	7.5	0.4	7.5
SOUTHWEST	15.4	40.8	55.4	21.4	20.0	12.6	9.2	7.8	0	17.5
SOUTHEAST	19.1	44.7	55.1	19.8	11.7	12.2	12.5	8.4	1.6	14.8

Of Interest

Overall, 75 percent of all respondents in the current research agreed with the statement compared with 70 percent of 2005 respondents.

Key Findings: Awareness

Chemicals released from burning garbage can cause serious health problems in people, most notably the elderly, pregnant women, and children

RESPONDENT GROUP	STRONGLY AGREE		AGREE		NEUTRAL		DISAGREE		STRONGLY DISAGREE	
	2010	2005	2010	2005	2010	2005	2010	2005	2010	2005
ALL RESPONDENTS	20.2	50.5	56.2	21.0	13.9	14.3	8.4	6.1	1.3	8.1
RESPONDENTS WHO BURN	7.6	45.0	51.7	18.3	20.9	17.2	16.6	7.9	3.3	11.7
FARM RESIDENTS	15.4	42.3	52.4	18.3	17.2	17.1	12.8	8.9	2.2	13.4
NORTHWEST	21.8	44.5	50.6	21.9	16.0	19.7	10.9	3.6	0.6	10.2
NORTHEAST	28.8	68.1	52.8	11.2	11.2	9.5	4.8	6.0	2.4	5.2
CENTRAL	22.6	49.1	58.7	25.9	12.6	14.0	6.1	6.6	0	4.4
SOUTHWEST	16.2	47.6	56.9	21.4	13.1	12.6	13.1	5.8	0.8	12.6
SOUTHEAST	14.8	47.9	58.6	20.4	15.6	14.6	8.2	7.1	2.7	10.0

Of Interest

Overall, 76 percent of all respondents in the current research agreed with the statement compared with 71 percent of 2005 respondents.

Key Findings: Awareness

Over 40 percent of wildfires are caused by careless burning of debris, and residents can be held liable for damages

RESPONDENT GROUP	STRONGLY AGREE		AGREE		NEUTRAL		DISAGREE		STRONGLY DISAGREE	
	2010	2005	2010	2005	2010	2005	2010	2005	2010	2005
ALL RESPONDENTS	20.0	57.6	60.5	19.3	14.8	13.7	4.0	4.4	0.7	5.1
RESPONDENTS WHO BURN	15.2	57.1	62.1	18.9	14.7	12.6	6.2	4.9	1.9	6.6
FARM RESIDENTS	21.2	55.5	60.7	14.3	13.6	15.1	3.9	4.1	0.6	11.0
NORTHWEST	24.4	55.1	52.6	18.1	16.7	15.2	5.1	5.8	1.3	5.8
NORTHEAST	29.6	60.7	54.4	15.4	11.2	14.5	3.2	6.0	1.6	3.4
CENTRAL	18.3	56.2	61.7	24.8	16.1	12.4	3.9	2.7	0	4.0
SOUTHWEST	16.2	60.2	63.1	18.4	15.4	9.7	4.6	4.9	0.8	6.8
SOUTHEAST	16.0	57.6	66.0	16.9	14.1	15.3	3.5	4.2	0.4	5.9

Of Interest

Overall, 80 percent of all respondents in the current research agreed with the statement compared with 77 percent of 2005 respondents.

Key Findings: Awareness

If you were told each of the previous statements are true, how likely would you be to stop burning garbage or household waste?

RESPONDENT GROUP	VERY LIKELY		SOMEWHAT LIKELY		NEUTRAL		SOMEWHAT UNLIKELY		VERY UNLIKELY	
	2010	2005	2010	2005	2010	2005	2010	2005	2010	2005
ALL RESPONDENTS	52.4	53.8	10.1	10.1	16.2	15.1	6.4	6.8	14.9	14.1
RESPONDENTS WHO BURN	16.1	36.1	14.2	10.0	30.3	19.7	9.5	10.0	29.9	24.2
FARM RESIDENTS	37.4	30.8	12.8	10.4	24.5	23.8	6.6	10.0	18.7	25.0
NORTHWEST	48.7	51.9	12.8	8.3	15.4	19.5	7.1	5.3	15.4	15.0
NORTHEAST	62.4	74.8	8.0	9.6	9.6	6.1	7.2	4.3	12.8	5.2
CENTRAL	60.0	59.5	7.4	10.9	15.7	13.2	4.3	6.8	12.6	9.5
SOUTHWEST	39.2	48.0	10.8	9.0	23.8	14.0	7.7	7.0	18.5	22.0
SOUTHEAST	49.6	41.3	11.7	11.1	16.4	19.6	6.3	8.9	16.0	19.1

Of Interest

Responses for all survey participants were virtually identical to the survey results registered in the 2005 survey.

Among those in the current research who indicated they burn their garbage or household waste 30 percent said they'd be likely to stop; in 2005, 46 percent said they would be likely to stop.

Among farm residents 50 percent of current respondents were likely to stop compared with 41 percent in the 2005 study.

Key Findings: Awareness

Of the following, which is the most important to you in relation to burning of garbage or waste?

FACTOR	ALL RESPONDENTS		BURNERS	FARM RESIDENTS
	2010	2005		
AIR POLLUTION	29.4	15.0	14.7	22.3
CONVENIENCE	11.7	9.2	23.7	16.8
COST OF GARBAGE SERVICE	10.9	X	22.7	14.3
GROUNDWATER CONTAMINATION	8.9	11.5	5.2	7.0
HEALTH EFFECTS	12.3	27.6	0.5	7.3
LOCAL REGULATIONS	3.1	11.4	2.4	4.4
RISK OF WILDFIRE	9.8	22.2	5.7	9.9
PROTECT PRIVACY/SECURITY OF PERSONAL PAPERS	13.8	X	25.1	17.9

Of Interest

In 2005 health effects was the most important consideration. In the current survey it fell below air pollution and privacy concerns.

In 2005 respondents were not asked about either the cost of garbage service or privacy.

Among those who say they burn their garbage or household waste, protection of privacy was the most important reason, closely followed by convenience and cost of garbage service.

Among farm residents, air pollution was the important factor.

Key Findings: Effective Information Sources

Rate the effectiveness of each of the following in informing you about garbage burning and its environmental health effects

INFORMATION SOURCE	VERY EFFECTIVE		SOMEWHAT EFFECTIVE		NEUTRAL	NOT VERY EFFECTIVE		NOT AT ALL EFFECTIVE	
	2010	2005	2010	2005	2005	2010	2005	2010	2005
TELEVISION ADVERTISING	16.8	39.0	38.8	18.2	19.6	20.7	8.2	23.5	15.0
RADIO ADVERTISING	10.4	23.6	41.1	23.8	28.2	24.3	11.9	24.0	12.5
NEWSPAPER ADVERTISING	11.1	24.0	42.1	22.7	28.2	27.2	11.2	19.4	13.9
DIRECT MAIL LITERATURE	15.4	16.7	34.5	18.8	17.8	21.3	15.4	28.6	31.2
BURN PERMIT LITERATURE	40.7	48.1	34.3	20.7	15.9	11.2	6.6	13.6	8.7

Of Interest

Unlike 2005 respondents in the current survey were only offered four ratings.

Literature obtained with a burn permitted was still rated the most effective form of information about environmental health effects.

A few individuals indicated they had never seen or received any materials about the effects associated with garbage burning.

The information contained within this report summarizes the key findings from interviews conducted with 897 residents living primarily in rural areas within 80 of Minnesota's 87 counties.

Verbatim comments recorded during the interview process are available separately.

Additional and expanded analysis of key questions and demographic groups is available upon request.

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