Stakeholder Survey of Supplementary Cementing Materials 2007

InterVISTAS

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1.0 INTRODUCTION

This report documents a study of the use of Supplementary Cementing Materials (fly ash, slag and silica fume) in Canada. The study uses information collected from a survey on Supplementary Cementing Materials, or SCMs, among key industry and government stakeholders.

This study was conducted by Inter*VISTAS* Consulting Inc. under contract to the EcoSmart Foundation, and with the support of the Cement Association of Canada (CAC), the Canadian Ready-Mixed Concrete Association (CRMCA), the Association of Canadian Industries Recycling Coal Ash (CIRCA), the National Research Council (Institute for Research in Construction), Public Works & Government Services Canada, Environment Canada and Natural Resources Canada.

The report is organized as follows:

- Section 2 describes the survey approach used;
- Section 3 presents the key findings; and
- Section 4 summarizes the main conclusions emerging from the study.

2.0 APPROACH

A survey of key stakeholders was conducted from February to March 2007. The survey instrument included a series of questions about:

- Stakeholder positions and concerns regarding SCMs;
- Acceptance level of SCM use among stakeholders;
- Role and influence of market forces over the timeline of the program;
- Recommendations to increase acceptance and use of SCMs; and
- Assessment of greenhouse gas reduction benefits.

A copy of the questionnaire is included in Appendix A.

2.1 SURVEY POPULATION

The target population consisted of key industry and government stakeholders. All organization names and contact information were provided by EcoSmart Foundation.

2.2 DATA COLLECTION

All stakeholders were initially contacted by e-mail. Following a brief introduction to the study, recipients were directed to a web-enabled survey, available in English and French. A reminder e-mail was sent two weeks later in an effort to increase the response rate.

A targeted group of key stakeholders who did not complete the online survey were contacted by telephone. The telephone interviews were conducted by staff of Inter*VISTAS* Consulting.

In order to improve response rates, all survey respondents were given the option to enter a draw to win dinner at the restaurant of their choice (5 prizes available, valued at $150 each).

2.3 SAMPLE SIZE

A total of 189 surveys were returned. Of these, 16 were removed from the sample because only a limited number of questions were answered. The final sample therefore included 173 responses. Nearly two-thirds of the organizations in the sample are designers, 27% of them are suppliers and 8% of them are builders. Approximately three-quarters of the organizations are located in British Columbia, Ontario, Alberta or Quebec.

The vast majority of respondents (94%) completed the survey via the on-line questionnaire. Only 6% of them completed the survey by telephone.

The results of the survey can be expected to be accurate within a margin of error of plus or minus 7.4% 19 times out of 20.

Table 1: Survey responses by organization type

Organization Type	Sample Size	%
Designers	**113**	**65%**
Developers	4	2%
Architects	25	14%
Structural Engineering Firms	15	9%
Material Engineering Firms and/or Test Labs	14	8%
Federal Government	7	4%
Provincial Government	15	9%
Municipal Government	14	8%
Non-Government Organizations	7	4%
Industry Associations	12	7%
Suppliers	**47**	**27%**
Cement Manufacturers	13	8%
Ready-mix Concrete Producers	23	13%
SCM Producers/Suppliers	11	6%
Builders	**13**	**8%**
Contractors	11	7%
Sub-trades	2	1%
TOTAL	**173**	**100%**

Table 2: Survey responses by province

Province	Sample Size	%
British Columbia	53	31%
Ontario	34	20%
Alberta	20	12%
Quebec	19	11%
Nova Scotia	7	4%
Saskatchewan	7	4%
Manitoba	6	3%
Newfoundland and Labrador	3	2%
Prince Edward Island	3	2%
New Brunswick	2	1%
Northwest Territories	2	1%
Nunavut	1	1%
No Province Indicated	16	9%
TOTAL	**173**	**100%**

2.4 DATA ANALYSIS

Survey data were analyzed using the Statistical Package for the Social Sciences (SPSS) software. The data were segmented by designers, suppliers and builders.

3.0 RESULTS

3.1 ACCEPTANCE LEVEL OF SCM USE AMONG STAKEHOLDERS

Acceptance levels of SCM use are strong among respondents. The suppliers – cement manufacturers, ready-mix concrete producers and SCM producers/suppliers – tend to be more accepting of SCMs than the designers or builders. From a geographic standpoint, acceptance levels appear to be strongest in Alberta, the Prairies and the Maritimes.

- Designers – the average rating of their overall acceptance of existing SCM specifications is 3.9 out of 5.
- Suppliers – the average rating of their overall acceptance of SCMs in concrete is 4.4 out of 5.
- Builders – the average rating of their overall acceptance of SCMs in concrete construction is 3.7 out of 5.

Table 3: Overall acceptance levels of SCM use or specifications

Organization Type	Responses	Average
Designers	111	3.9
Suppliers	47	4.4
Builders	12	3.7

Notes: 1) Respondents were asked to rate their acceptance on a 5-point scale, where 5=very strong and 1=very weak.

Table 4: Acceptance levels by province

Province	Responses	Average
British Columbia	51	4.0
Ontario	34	4.0
Alberta	20	4.4
Quebec	19	3.3
Nova Scotia / Newfoundland and Labrador / Prince Edward Island / New Brunswick	15	4.2
Saskatchewan / Manitoba	13	4.2
Northwest Territories / Nunavut	3	3.3
No Province Indicated	15	4.4

3.2 Stakeholder Positions and Concerns

Proportion of Organizations Using or Specifying SCMs

The majority of respondents are currently using or specifying SCMs.

- Designers – seven in ten currently specify the use of SCMs.
- Suppliers – all the ready-mix concrete producers use SCMs in concrete.
- Builders – three-quarters of them currently use SCMs in concrete construction.

Table 5: Proportion of respondents who currently use or specify SCMs

Organization Type	Responses	Yes	No	Don't Know
Designers	112	69%	20%	11%
Suppliers				
Ready-Mix Concrete Producers	23	100%	-	-
Builders	12	75%	25%	-

Notes: 1) Only Ready-mix Concrete Producers were asked this question among Suppliers.

Main Reasons for Using or Specifying SCMs

A variety of reasons were given for using or specifying SCMs.

- Designers – the main reasons for specifying SCMs are concrete performance, environmental benefits and LEED credit. Only 27% selected cost as a key reason.
- Suppliers – among ready-mix concrete producers, the main reasons for using SCMs are concrete performance, cost and environmental benefits.
- Builders – the main reasons for using SCMs are concrete performance, environmental benefits and LEED credit. Only one-third chose cost as a main reason.

Many respondents selected "other" as a main reason for using or specifying SCMs. A complete list of these responses is contained in Appendix B.

Table 6: Main reasons for using or specifying SCMs

Organization Type	Responses	Concrete Performance	Cost	LEED credit	Environmental benefits	Other
Designers	77	71%	27%	57%	66%	6%
Suppliers						
Ready-Mix Concrete Producers	23	91%	87%	n/a	87%	13%
Builders	9	56%	33%	44%	56%	22%

Notes: 1) Only Ready-mix Concrete Producers were asked this question among Suppliers.
2) Respondents were able to select more than one reason.

MAIN REASONS FOR NOT USING OR SPECIFYING SCMS

Several reasons were given for not using or specifying SCMs.

- Designers – among those not specifying SCMs, nearly two-thirds selected "other" as a main reason for not doing so. Concrete performance and cost were chosen less frequently.
- Builders – the most common reasons for not using SCMs are cost and "other." However, these findings should be interpreted with caution due to the small sample size.

A complete list of the "other" responses is contained in Appendix B.

Table 7: Main reasons for not using or specifying SCMs

Organization Type	Responses	Concrete Performance	Cost	Other
Designers	22	18%	14%	64%
Suppliers				
Ready-Mix Concrete Producers	0	-	-	-
Builders	3	-	67%	67%

Notes: 1) Only Ready-mix Concrete Producers were asked this question among Suppliers. 2) Respondents were able to select more than one reason.

PERCEIVED EFFECTIVENESS OF SCMS

Most stakeholders perceive SCMs as being effective in terms of concrete performance, costs and environmental benefits. In general, suppliers tend to have more positive perceptions than builders.

- Suppliers – concrete performance received an average rating of 4.7; costs received a rating of 4.3; and environmental benefits received a rating of 4.4.
- Builders – concrete performance received an average rating of 4.2; costs received a rating of 3.1; and environmental benefits received a rating of 3.9.

The differences between suppliers and builders should be interpreted with caution since suppliers were asked to rate the effectiveness of SCMs, whereas builders were asked to rate their satisfaction with SCMs.

Table 8: Perceived effectiveness of SCMs

Organization Type	Responses	Concrete Performance	Costs	Environmental Benefits
Suppliers	47	4.7	4.3	4.4
Builders	12	4.2	3.1	3.9

Notes: 1) Suppliers were asked to rate the effectiveness of SCMs on a 5-point scale, where 5=very effective and 1=very ineffective.
2) Builders were asked to rate their satisfaction with SCMs on a 5-point scale, where 5 = very satisfied and 1=very dissatisfied.
3) Designers were not asked this question.

MAIN BARRIERS THAT LIMIT SCM USE

A variety of barriers that limit SCM use were suggested by the respondents. These are summarized below.

Policy Barriers

The main policy barriers relate to government restrictions concerning SCM use, as well as the use of older specifications that do not reflect SCM attributes. However, a large share of respondents said there are no policy barriers. A complete list of responses is included in Appendix B.

Table 9: Policy barriers that limit SCM use

Policy Barriers	Designers	Suppliers	Builders	Total
Government restrictions concerning SCM use	13	4	1	18
Use of older specifications/guidelines that do not reflect SCM qualities	6	6	1	13
Policy of not using SCMs due to past experience with product	2	5	-	7
Lack of understanding among policymakers/policies	2	5	-	7
Lack of regulatory targets / government support	3	2	-	5
No financial or government incentives	2	-	-	2
Risk management concerns with increased levels of fly ash	1	-	-	1
Not enough knowledge dissipation through government	1	-	-	1
City specifies recycled materials	1	-	-	1
CSA has made SCMs easier to use	-	1	-	1
Other	4	2	1	7
None	11	5	4	20
Not sure / Don't know	2	-	1	3

Technical Barriers

The main technical barriers relate to: the setting times for strength gain; a lack of information, research and education regarding quality; and inconsistent or inferior quality of SCMs. A complete list of responses is included in Appendix B.

Table 10: Technical barriers that limit SCM use

Technical Barriers	Designers	Suppliers	Builders	Total
Setting times for strength gain	22	8	-	30
Lack of information, research and education regarding quality	6	9	1	16
Inconsistent / inferior quality	9	4	-	13
Difficult to work with / finish	8	-	-	8
Availability of SCMs	6	1	-	7
Difficult to use in cold weather	4	3	-	7
Lack of knowledge of SCM usage	5	1	-	6
Need for uniform SCM standards	3	-	-	3
Properties of SCMs limit their usage	2	-	1	3
Greater skill and experience required to work with fly ash	2	-	-	2
Construction schedule restraints	2	-	-	2
Emission devices at plants create inferior fly ash	-	2	-	2
Contamination concerns with using waste products	2	-	-	2
Perceived construction delays	1	-	-	1
Seasonal limitations	1	-	-	1
Number of silos at RMX plant	-	1	-	1
Lack of substitute materials	-	-	1	1
Other	-	2	2	4
None	3	5	-	8
Not sure / Don’t know	-	-	1	1

Economic Barriers

The main economic barriers relate to: costs associated with the increased time requirements when using SCMs; costs of materials; and transportation costs. Though, a large portion of respondents said there were no economic barriers. A complete list of responses is included in Appendix B.

Table 11: Economic barriers that limit SCM use

Economic Barriers	Designers	Suppliers	Builders	Total
Costs – increased time requirements when using SCMs	19	-	-	19
Costs – materials (fly ash)	10	7	1	18
Costs – general	7	2	4	13
Costs – transportation	6	5	-	11
Costs – silos	1	5	-	6
Availability of SCMs	2	1	1	4
Costs – associated with increased demand	2	-	1	3
Savings not passed onto customer	2	-	-	2
Lack of cost savings	2	-	-	2
Inconsistent product	2	-	-	2
Cement supplier monopoly	-	1	-	1
Costs – increased technical expertise	1	-	-	1
Additional storage space needed by customer	-	1	-	1
Other	-	2	1	3
None	10	7	1	18
Not sure / Don’t know	1	-	-	1

Other Barriers

The main other barriers relate to: lack of information and limited knowledge of SCMs; resistance to change in the marketplace; limited availability of SCMs; and inconsistent and inferior quality of SCMs. A complete list of responses is included in Appendix B.

Table 12: Other barriers that limit SCM use

Other Barriers	Designers	Suppliers	Builders	Total
Lack of information/knowledge of SCMs	10	2	1	13
Resistance to change in marketplace	8	-	2	10
Availability of SCMs	4	5	-	9
Inferior/inconsistent quality	2	6	1	9
Lack of experience using SCMs	4	1	1	6
Lack of educational programs on using SCMs	4	1	1	6
Lack of fly ash in some regions	2	1	-	3
Slow curing times	3	-	-	3
Cement producer monopoly	-	1	1	2
Risk of litigation when using SCMs	2	-	-	2
Preference for non-SCM products	1	1	-	2
Lack of press on SCMs	1	-	-	1
Past perceptions of SCM quality	-	1	-	1
No credit given to contractors using SCMs	1	-	-	1
Awareness of sustainability issues	1	-	-	1
Lack of support for SCM standards	1	-	-	1
Rail service monopoly to transport	-	1	-	1
Specifications do not allow SCM use	-	1	-	1
Other	1	1	1	3
None	5	-	-	5
Not sure / Don’t know	1	-	-	1

3.3 Role and Influence of Market Forces

Perceived changes in SCM use/specifications over past 3 to 5 years

The majority of respondents noticed an increase in SCM use or specifications over the past 3 to 5 years.

- Designers –
  - About half of them noticed an increase in the specifications for SCMs over the past 3 to 5 years, while 20% of them thought the specifications remained about the same. 29% of the designers did not know the direction of change.
- Suppliers –
  - Almost all the cement manufacturers (92%) noticed an increase in the amount of SCMs used in blended cements over the past 3 to 5 years. Additionally, 85% of them noticed an increase in the quantity of blended cement produced over the past 3 to 5 years.
  - Nearly eight in ten of the ready-mix concrete producers noticed an increase in the amount of SCMs used in concrete over the past 3 to 5 years.
  - More than seven in ten of the SCM producers/suppliers noticed an increase in the amount of SCMs their company has produced/supplied over the past 3 to 5 years.
- Builders –
  - About two-thirds of them noticed an increase in the amount of SCMs used in concrete over the past 3 to 5 years, while 8% of them thought it remained about the same. One-quarter of the builders did not know the direction of change.
  - Half of them noticed an increase in the quantity of concrete that incorporates SCMs over the past 3 to 5 years, 8% of them thought it has remained about the same, while 17% of them noticed a decrease. One quarter of the builders did not know the direction of change.

Table 13: Perceived changes in SCM use or specifications over the past 3 to 5 years

Organization Type	Responses	Increased	Decreased	Remained About the Same	Don't Know
Designers	112	51%	-	20%	29%
Suppliers					
Cement Manufacturers – Amount of SCMs in Blended Cement	13	92%	-	8%	-
Cement Manufacturers – Amount of Blended Cement Produced	13	85%	-	15%	-
Ready-Mix Concrete Producers	23	78%	-	18%	4%
SCM Producers/ Suppliers	11	73%	-	27%	-
Builders					
Amount of SCMs in Concrete	12	67%	-	8%	25%
Amount of Concrete that Incorporates SCMs	12	50%	17%	8%	25%

Notes:
1) Suppliers were asked about changes in specifications for SCMs.
2) Cement Manufacturers were asked about changes in the amount of SCMs used in blended cements, as well as changes in the amount of blended cement produced.
3) Ready-Mix Concrete Producers were asked about changes in the amount of SCMs used in concrete.
4) SCM Producers/Suppliers were asked about changes in the amount of SCMs their company has produced/supplied.
5) Builders were asked about changes in the amount of SCMs used in concrete, as well as changes in the amount of concrete that incorporates SCMs.

MAIN REASONS FOR CHANGES

A variety of reasons were given for the changes observed in SCM use or specifications over the past 3 to 5 years. Note that no reasons were suggested by those who said there has been a decrease in SCM use or specifications.

Reasons for Increase

The main reasons for an increase relate to: greater education and awareness regarding SCMs; concerns over sustainability and the environment; specific SCM attributes, for example, hardening, durability and quality; greater acceptance of SCMs in the marketplace; and the LEED program. A complete list of these responses in contained in Appendix B.

Table 14: Reasons for increase in SCM use or specifications

Reason	Designers	Suppliers	Builders	Total
Greater education / awareness	14	9	5	28
Concerns over sustainability and the environment	16	6	2	24
Specific SCM qualities (e.g., hardening, durability, quality)	11	7	1	19
Greater acceptance in the marketplace	11	7	-	18
LEED program	6	5	2	13
Reduced costs	3	2	3	8
SCMs specifically demanded	-	7	1	8
Better SCM regulations	2	2	-	4
Overall economy creating increased construction demand	-	3	-	3
Cement shortages	-	1	1	2
Advances in concrete pumping technologies	1	-	-	1
More consistent product	-	1	-	1
Not sure / Don't know	1	-	-	1

Reasons for Staying the Same

The main reasons for SCM use or specifications remaining about the same are listed in the table below. These results should be interpreted with caution due to the small sample size. A complete list of responses in contained in Appendix B.

Table 15: Reasons for SCM use or specifications remaining about the same

Reason	Designers	Suppliers	Builders	Total
Poor historical performance	2	-	-	2
Resistance to change in the marketplace	1	-	-	1
Lack of support from government agencies	-	1	-	1
Increased costs	1	-	-	1
Poor performance in cold weather climates	1	-	-	1
Cement lobby against SCMs	1	-	-	1

3.4 Recommendations to Increase Acceptance and Use of SCMs

Proportion of stakeholders who feel something should be done to increase acceptance and use of SCMs

The majority of respondents think something should be done to increase acceptance and use of SCMs. Suppliers tend to be more supportive of action than designers or builders.

- Designers – eight in ten feel something should be done.
- Suppliers – 86% of them think something should be done.
- Builders – three-quarters of them feel something should be done.

Table 16: Proportion of respondents who feel something should be done to increase acceptance and use of SCMs

Organization Type	Responses	Yes	No
Designers	86	80%	20%
Suppliers	43	86%	14%
Builders	12	75%	25%

Those respondents who stated “yes” were asked to specify what should be done to increase acceptance and use of SCMs. The most common suggestions relate to: education; marketing of SCMs; and publishing research and performance results. Several respondents, especially the suppliers, suggested mandatory requirements and legislation for SCM use. A complete list of responses is contained in Appendix B.

Table 17: Suggested actions for increasing acceptance and use of SCMs

Reason	Designers	Suppliers	Builders	Total
Education (contractors, engineers, general public)	25	13	1	39
Marketing of SCMs	11	5	3	19
Publications addressing SCM research and performance results	13	5	-	18
Mandatory requirements/legislation for SCM use	3	5	1	9
Work with governments and user groups to develop and promote SCMs	4	5	-	9
Promotion of environmental benefits	2	3	1	6
Incentives for project owners and suppliers	5	-	-	5
Standards for SCM mixes/quality/testing	2	2	1	5
Assurance of availability	2	-	-	2
CSA composition recommendations	1	-	1	2
Provincial greenhouse gas targets	1	1	-	2
Other	7	-	2	11

RECOMMENDATIONS FOR CHANGING SPECIFICATIONS FOR SCM USE

The designers were asked for suggestions for changing specifications for SCM use. The common recommendation was to change specifications based on regional circumstances. However, most respondents did not have any suggestions. A full list of responses is included in Appendix B.

Table 18: Recommendations for changing specifications for SCM use

Recommendation	Designers
Change specifications based on regional circumstances	4
Provide examples / data of SCM usage	2
Create specifications through SCM standards	2
Note the limitations (i.e. cold weather) of SCMs	1
Mandate use of fly ash	1
Promote SCM use though governments and industry associations	1
Develop faster curing SCM cement	1
Change specifications through technical committees	1
Educate engineers	1
Need for assurances when using higher SCM concentrations	1
Make SCM specifications “results driven”	1
Change specifications to allow for longer cure times	1
None	25

PROGRAMS THOUGHT TO BE MOST EFFECTIVE FOR PROMOTING SCMS

Workshops, seminars and demonstration projects are generally thought to be the most effective types of programs for promoting SCMs. Incentives were strongly preferred by the builders, but less so by the designers or suppliers.

- Designers – the types of programs thought to be most effective are workshops/seminars and demonstration projects. Research programs and incentives were selected less frequently.
- Suppliers – they also think the most effective programs are workshops/seminars and demonstration projects. Research programs and incentives were chosen less often.
- Builders – the types of programs thought to be most effective are incentives, followed by workshops/seminars and demonstration projects. Research programs were selected less frequently.

Many respondents selected "other" as the type of program. A complete list of these responses is contained in Appendix B.

Table 19: Types of programs thought to be most effective for promoting SCMs

Organization Type	Responses	Research Programs	Demonstration Projects	Workshops /Seminars	Incentives	Others
Designers	93	43%	70%	72%	37%	9%
Suppliers	43	40%	56%	72%	33%	12%
Builders	12	33%	67%	67%	75%	17%

Notes: 1) Respondents were able to select more than one reason.

AWARENESS OF EXISTING PROGRAMS THAT PROMOTE SCMS

Levels of awareness of existing SCM programs vary considerably among the three organization types.

- Designers – 44% of them are aware of existing programs.
- Suppliers – 78% of them are aware of existing programs.
- Builders – only 17% of them are aware of existing programs.

Table 20: Proportion of respondents who are aware of existing programs that promote SCM use

Organization Type	Responses	Yes	No
Designers	89	44%	56%
Suppliers	41	78%	22%
Builders	12	17%	83%

Those respondents who stated "yes" were asked to specify the programs. The most common responses were the EcoSmart programs, LEED program and CIRCA programs. A complete list of responses is contained in Appendix B.

Table 21: Programs specified by respondents

Program	Designers	Suppliers	Builders	Total
EcoSmart programs	16	6	-	22
LEED program	8	10	1	19
CIRCA programs	1	4	-	5
NRC Canada	1	2	-	3
CAC programs	2	-	-	2
PCA programs	1	-	-	1
ACAA	-	1	-	1
APRMCA	-	1	-	1
CRMCA	-	1	-	1

TYPES OF INFORMATION NOT AVAILABLE THAT WOULD ENABLE INFORMED DECISIONS

Approximately half of the respondents said there are types of information not available that would enable informed decisions regarding the use of SCMs.

Table 22: Types of information not available that would enable informed decisions regarding the use of SCMs

Organization Type	Responses	Yes	No	Don't Know
Designers	75	45%	54%	1%
Suppliers	34	44%	56%	0%
Builders	10	50%	50%	0%

Those respondents who stated "yes" were asked to specify the types of information. The most common responses related to information about testing and field experience, as well as information about standardized specifications for SCMs. A complete list of responses is contained in Appendix B.

Table 23: Information respondents felt would enable informed decision on SCMs

Program	Designers	Suppliers	Builders	Total
Testing and field experience	13	3	-	16
Standardized specifications for SCMs	3	3	3	9
Information on durability, uses, benefits and costs	6	2	-	8
General increase in quantity of available information	3	-	2	5
Impacts on construction schedules	4	-	-	4
Guidelines on SCM use	-	4	-	4
Availability of SCMs	2	-	-	2
Other	2	3	-	5
None	2	-	-	2

3.5 Assessment of GHG Reduction Benefits

Awareness of Greenhouse Gas Reduction Benefits

The vast majority of designers and suppliers are aware that SCM use in concrete can reduce greenhouse gas emissions associated with concrete production. By comparison, just over half of the builders are aware of these greenhouse gas reduction benefits.

Table 24: Proportion of respondents who are aware SCM use in concrete can reduce greenhouse gas emissions associated with concrete production

Organization Type	Responses	Yes	No
Designers	95	91%	9%
Suppliers	43	95%	5%
Builders	13	54%	46%

AWARENESS OF OTHER SUSTAINABILITY BENEFITS

Most stakeholders are aware of other sustainability benefits in the increased use of SCMs. However, they tend to more aware of environmental benefits than either economic or social benefits. Among the three organization types, suppliers tend to be more aware than designers or builders of the sustainability benefits associated with SCM use.

- Designers – 79% of them are aware of environmental benefits, 71% are aware of economic benefits and 54% are aware of social benefits.
- Suppliers – 95% of them are aware of environmental benefits, 90% are aware of economic benefits and 74% are aware of social benefits.
- Builders – 77% of them are aware of environmental benefits, 69% are aware of economic benefits and 54% are aware of social benefits.

Table 25: Proportion of respondents who think there are other sustainability benefits in the increased use of SCMs

Organization Type	Responses	Environmental			Economic			Social		
		Yes	No	DK	Yes	No	DK	Yes	No	DK
Designers	95	79%	3%	18%	71%	10%	19%	54%	10%	37%
Suppliers	42	95%	5%	0%	90%	5%	5%	74%	5%	21%
Builders	13	77%	0%	23%	69%	15%	15%	54%	8%	38%

3.6 OTHER COMMENTS

Survey respondents were given the opportunity to provide any final comments or suggestions. The most frequent comments related to providing more:

- Research on SCM use;
- Demonstration projects using SCMs;
- Promotion of SCMs as being environmentally beneficial; and
- Education of the public and all industry stakeholders on SCMs.

A complete list of responses is included in Appendix B.

4.0 CONCLUSIONS

The main conclusions emerging from this study are:

- Acceptance levels of SCM use are strong, especially among the suppliers.
- The majority of stakeholders are currently using or specifying SCMs, largely because of concrete performance and environmental benefits.
- The main barriers that limit SCM use are thought to be:
    - Policy Barriers – government restrictions on SCMs and the use of older specifications/guidelines that do not reflect SCM qualities.
    - Technical Barriers – setting times for strength gain and perceived inconsistent/inferior quality of SCMs.
    - Economic Barriers – increased costs related to time requirements, materials and transportation.
    - Other Barriers – lack of information and research on SCMs, market resistance, and limited availability of SCMs.
- Most stakeholders have noticed an increase in SCM use or specifications over the past 3 to 5 years. This increase is thought to be driven by greater education and awareness; concerns over sustainability and the environment; specific SCM attributes, such as hardening, durability and quality; and greater acceptance in the marketplace.
- Most stakeholders think something should be done to increase acceptance and use of SCMs. More education and marketing are the most common suggestions for increasing SCM acceptance and use.
- Workshops, seminars and demonstration projects are generally thought to be the most effective types of programs for promoting SCMs.
- Levels of awareness of existing SCM programs vary considerably among the organization types. Suppliers tend to be more aware of existing programs than designers or builders.
- Approximately half of the stakeholders think there are types of information not available that would enable informed decisions regarding SCMs. Information on testing and field experience is the most common type of information requested.
- The majority of stakeholders are aware that SCM use in concrete can reduce greenhouse gas emissions associated with concrete production.
- Most stakeholders are also aware of other sustainability benefits in the increased use of SCMs. Levels of awareness are stronger for environmental benefits than for economic or social benefits.

Appendix A: Survey Instrument

Dear _____:

You are invited to participate in our survey on the use of Supplementary Cementing Materials (fly ash, slag and silica fume) in Canada.

The use of Supplementary Cementing Materials, or SCMs, is becoming the norm in concrete construction in Canada, though the benefits and challenges of SCM use are not always well understood. Getting your perceptions on SCMs will help in the development of resources, policies and tools that will benefit everyone with an interest in concrete.

This survey is supported by organizations representing users, suppliers and specifiers of cement, concrete and SCMs, as well as governmental, non-governmental and research organizations (see who we are below). We need your help and would truly appreciate a few minutes of your time to complete our on-line survey.

As a thank you for taking the time to complete the survey, you may choose to enter a draw to win dinner at the restaurant of your choice (5 prizes available, valued at $150 each). Be sure to get your responses in by Wednesday, February 28 to be eligible for the prize draw. You will also receive a report on the findings of this survey.

Please be assured that your feedback will be kept strictly confidential and anonymous. Any personal identification information you provide will be used only to contact you in the event that you win one of the prizes.

Please click on the following link to begin or re-enter the survey:

http://scmsurvey.intervistas.com/index.php?SS=y&email=****&pw=****

If you are unable to directly access the survey using the above link, please go to:

http://scmsurvey.intervistas.com

LoginID: ****

Password: ****

This study is being conducted by Inter*VISTAS* Consulting under contract to the EcoSmart Foundation, and with the support of the Cement Association of Canada (CAC), the Canadian Ready-Mixed Concrete Association (CRMCA), the Association of Canadian Industries Recycling Coal Ash (CIRCA), the National Research Council (Institute for Research in Construction), Public Works & Government Services Canada, Environment Canada and Natural Resources Canada.

If you have any comments or questions, please contact Joe Kelly by phone at 604-717-1811. Thank you for your participation.

Sincerely,

Joe Kelly, PhD
Director, Strategic Services
Inter*VISTAS* Consulting Inc.
Airport Square – Suite 550
1200 West 73rd Avenue
Vancouver, BC V6P 6G5

Survey on Supplementary Cementing Materials

Welcome to our survey on Supplementary Cementing Materials

We are seeking your feedback in an effort to better understand the current use of Supplementary Cementing Materials (fly ash, slag and silica fume) in Canada.

The survey takes less than 10 minutes to complete. We would sincerely appreciate your responses by Wednesday, February 28. Thank you for your time.

Start Survey (English) Start Survey (French)

This study is being conducted by Inter*VISTAS* Consulting under contract to the EcoSmart Foundation, and with the support of the Cement Association of Canada (CAC), the Canadian Ready-Mixed Concrete Association (CRMCA), the Association of Canadian Industries Recycling Coal Ash (CIRCA), the National Research Council (Institute for Research in Construction), Public Works & Government Services Canada, Environment Canada and Natural Resources Canada.

START OF SURVEY

Participation in this survey is voluntary. Your responses will be kept strictly confidential and anonymous.

1. What is the name of your organization: _____

2. Where is your organization located?

British Columbia	Nova Scotia
Alberta	Prince Edward Island
Saskatchewan	Newfoundland and Labrador
Manitoba	Yukon
Ontario	Northwest Territories
Quebec	Nunavut
New Brunswick	

3. Which of the following categories best describes your organization?

SUPPLIER
Cement manufacturer
Ready-mixed concrete producer
Supplementary Cementing Material (SCM) producer/supplier

BUILDER (USER)
Contractor
Sub-trades

DESIGNER
Developer
Architect
Structural engineering firm
Material engineering firm and/or test lab
Federal government
Provincial government
Municipal government
Non-government organization
Industry association

	DESIGNERS	SUPPLIERS	BUILDERS (USERS)
1	How would you rate your overall acceptance of existing specifications for SCM use? [Very strong, Somewhat strong, Neither strong nor weak, Somewhat weak, Very weak, Don't know]	How would you rate your overall acceptance of the use of SCMs in concrete? [Very strong, Somewhat strong, Neither strong nor weak, Somewhat weak, Very weak, Don't know]	How would you rate your overall acceptance of the use of SCMs in concrete construction? [Very strong, Somewhat strong, Neither strong nor weak, Somewhat weak, Very weak, Don't know]
2a	Does your organization currently specify the use of SCMs? [Yes/No/Don't know]	Ready-Mixed Concrete Producers ONLY Does your company use SCMs in concrete? [Yes/No/Don't know]	Does your company use SCMs in concrete construction? [Yes/No/Don't know]
2b	IF YES: What are the main reasons for specifying SCMs? [Check ☑ all that apply concrete performance, cost, LEED credit, environmental benefits, other (please specify_____)] IF NO: What are the main reasons for not specifying SCMs? [Check ☑ all that apply concrete performance, cost, other (please specify_____)]	IF YES: What are the main reasons for using SCMs? [Check ☑ all that apply concrete performance, cost, environmental benefits, other (please specify_____)] IF NO: What are the main reasons for not using SCMs? [Check ☑ all that apply concrete performance, cost, other (please specify_____)]	IF YES: What are the main reasons for using SCMs? [Check ☑ all that apply concrete performance, cost, LEED credit, environmental benefits, other (please specify_____)] IF NO: What are the main reasons for not using SCMs? [Check ☑ all that apply concrete performance, cost, other (please specify_____)]
2c		How would you rate the effectiveness of SCMs in the following areas: a) concrete performance b) cost c) environmental benefits [Very effective, Somewhat effective, Neither effective nor weak, Somewhat ineffective, Very ineffective, Don't know]	Based on your knowledge or your experience, please rate your satisfaction with SCMs in the following areas: a) concrete performance b) cost c) environmental benefits [Very satisfied, Somewhat satisfied, Neither satisfied nor dissatisfied, Somewhat dissatisfied, Very dissatisfied, Don't know]
3a	Have you noticed any changes in the specifications for SCMs over the past 3 to 5 years? [the percentage of SCMs specified has: remained about the same, increased, decreased, don't know]	Cement Manufacturers ONLY Have you noticed any changes in the amount of SCMs used in blended cements over the past 3 to 5 years? [the percentage of SCMs in cement has: remained about the same, increased, decreased, don't know] Ready-Mixed Concrete Producers ONLY Have you noticed any changes in the amount of SCMs used in concrete over the past 3 to 5 years? [the average SCM-to-cement ratio used in concrete has:	Have you noticed any changes in the amount of SCMs used in concrete over the past 3 to 5 years? [the percentage of SCMs in cement has: remained about the same, increased, decreased, don't know]

		remained about the same, increased, decreased, don't know] SCM Producers/Suppliers ONLY Have you noticed any changes in the amount of SCMs your company has produced/supplied over the past 3 to 5 years (in terms of total tonnage)? [the quantity of SCMs supplied has: remained about the same, increased, decreased, don't know]	
3b		Cement Manufacturers ONLY Have you noticed any changes in the quantity of blended cement produced over the past 3 to 5 years? [the quantity of blended cement produced compared to portland cement has: remained about the same, increased, decreased, don't know]	Have you noticed any changes in the quantity of concrete that incorporates SCMs over the past 3 to 5 years? [the quantity of concrete that incorporates SCMs compared to concrete made with cement only has: remained about the same, increased, decreased, don't know]
4	In your opinion, what are the main reasons for these changes? [open-ended]	In your opinion, what are the main reasons for these changes? [open-ended]	In your opinion, what are the main reasons for these changes? [open-ended]
5	In your opinion, what are the main barriers that limit the use of SCMs? Please consider policy barriers, technical barriers, economic barriers and other barriers. [Policy barriers _____. Technical barriers _____. Economic barriers _____. Other barriers _____.]	In your opinion, what are the main barriers that limit the use of SCMs? Please consider policy barriers, technical barriers, economic barriers and other barriers. [Policy barriers _____. Technical barriers _____. Economic barriers _____. Other barriers _____.]	In your opinion, what are the main barriers that limit the use of SCMs? Please consider policy barriers, technical barriers, economic barriers and other barriers. [Policy barriers _____. Technical barriers _____. Economic barriers _____. Other barriers _____.]
6a	In your opinion, should anything be done to increase acceptance and use of SCMs? [No/ Yes, Please specify_____]	In your opinion, should anything be done to increase acceptance and use of SCMs? [No/ Yes, Please specify_____]	In your opinion, should anything be done to increase acceptance and use of SCMs? [No/ Yes, Please specify_____]
6b	Do you have any recommendations for changing existing specifications for SCM use? [open-ended]		
7	In your opinion, what types of programs are most effective for promoting SCMs? [Check ☑ all that apply: research programs, demonstration projects, workshops & seminars, incentives, other (please specify_____)]	In your opinion, what types of programs are most effective for promoting SCMs? [Check ☑ all that apply: research programs, demonstration projects, workshops & seminars, incentives, other (please specify_____)]	In your opinion, what types of programs are most effective for promoting SCMs? [Check ☑ all that apply: research programs, demonstration projects, workshops & seminars, incentives, other (please specify_____)]
8	Are you aware of any existing programs that promote SCM	Are you aware of any existing programs that promote SCM use?	Are you aware of any existing programs that promote SCM

	use? [No/ Yes, Please specify_____]	[No/ Yes, Please specify_____]	use? [No/ Yes, Please specify_____]
9	Are there any types of information not available that would enable informed decisions regarding the use of SCMs? [No/ Yes, Please specify type of information _____]	Are there any types of information not available that would enable informed decisions regarding the use of SCMs? [No/ Yes, Please specify type of information _____]	Are there any types of information not available that would enable informed decisions regarding the use of SCMs? [No/ Yes, Please specify type of information _____]
10	Are you aware that SCM use in concrete can reduce greenhouse gas emissions associated with concrete production? [No/ Yes]	Are you aware that SCM use in concrete can reduce greenhouse gas emissions associated with concrete production? [No/ Yes]	Are you aware that SCM use in concrete can reduce greenhouse gas emissions associated with concrete production? [No/ Yes]
11	Do you think there are other sustainability benefits in the increased use of SCMs? a) environmental b) economic c) social [No/ Yes]	Do you think there are other sustainability benefits in the increased use of SCMs? a) environmental b) economic c) social [No/ Yes]	Do you think there are other sustainability benefits in the increased use of SCMs? a) environmental b) economic c) social [No/ Yes]
12	Do you have any final comments or suggestions?	Do you have any final comments or suggestions?	Do you have any final comments or suggestions?

Submit Survey

Your response has been submitted. Thank you for taking the time to complete this questionnaire. Your feedback will help us gain a better understanding of SCM use in Canada.

Please enter your name and contact information if you would like to be entered into a draw to win dinner at the restaurant of your choice (5 prizes available, valued at $150 each).

Name: _____ Phone: _____ Email: _____

Please contact us if you have any further questions or comments.

Appendix B: Responses to Open-Ended Questions

This appendix includes the detailed responses from the open-ended questions in the survey. The responses have been slightly edited for grammar and spelling.

Q2b: What are the main reasons for [not] using/specifying SCMs? (Other)

Note: the total number respondents who selected the "other" category may not equal the number of responses listed below because 1) "other" may have been selected but no response specified, or 2) more than one response may have been specified in the text box.

DESIGNERS

Yes – Other (5)

- Greater lifecycle and durability with SCMs (1)
- Reduction of greenhouse gases (1)
- Lower heat of hydration and decreased permeability (1)
- Advantageous setting times for towel and putty finishing (1)
- No response specified (1)

No – Other (14)

- Do not specify specific concrete (4)
- Poor concrete performance (3)
- Increased cost (3)
- Conservative attitude towards change (2)
- Lack of understanding/unfamiliarity with the product (1)
- Questionable durability of SCMs (1)
- Lack of materials (1)
- Lack of incentives to use SCMs (1)
- No linkage to environmental regulations (1)
- Questionable in the face of melting salts (1)
- Negative public perception of burn furnace slag (1)
- Contractors don't want to use SCMs (1)
- Switch to "performance" specifications (1)

SUPPLIERS

Yes – Other (3)

- Reduced ASR (2)
- Greater lifecycle and durability with SCMs (1)
- Lower heat of hydration and decreased permeability (1)
- SCMs directly specified (1)
- Ease of usability (1)

No – Other (0)

BUILDERS

Yes – Other (2)

- SCMs directly specified (1)
- Soil Strength (1)

No – Other (2)

- Increased cost (2)
- Lack of understanding/unfamiliarity with the product (1)
- Lack of materials (1)

Q4: In your opinion, what are the main reasons for changes in SCM use/specifications over the past 3 to 5 years?

DESIGNERS

Noticed an increase (57)

- Increased emphasis on sustainability and the environment (16)
- Increased awareness and education regarding the use of SCMs (14)
- Greater acceptance in the marketplace (11)
- Specific SCM qualities (11)
  - Benefits and performance SCMs to enhance concrete properties (6)
  - Hardening properties of SCMs (1)
  - Increased durability of SCM concrete (4)
- LEED program (6)
- Cost Reductions (3)
- Better SCM regulations (2)
- Advances in concrete pumping technology (1)
- Don't Know (1)

Noticed no change (22)

- Poor product in the past (2)
- Marketplace reluctant to change (1)
- SCMs not good in cold weather climates (1)
- Cost (1)
- "Cement Lobby" against the use of SCMs (1)

Did not know direction of change (33)

- Not in a position to specify SCMs (1)

SUPPLIERS - CEMENT MANUFACTURERS

Noticed an increase (12)

- Greater acceptance in the marketplace (3)
- Increased awareness and education regarding the use of SCMs (3)
- Increased emphasis on sustainability and the environment (3)
- Specific SCM qualities (3)

  - Benefits and performance SCMs to enhance concrete properties (2)
  - Increased durability of SCM concrete (1)
- SCMs requested specifically t (2)
- LEED program (1)
- Economy creating increased demand on the construction industry (1)
- Reduced Cost (1)
- Economy creating increased demand on the construction industry (1)
- Miscellaneous (1)

Noticed no change (1)

SUPPLIERS – READY-MIX CONCRETE PRODUCERS

Noticed an increase (18)

- Greater acceptance in the marketplace (4)
- Specific SCM qualities (4)
  - Benefits and performance SCMs to enhance concrete properties (3)
  - Performance against AAR (1)
  - Prevent sulphate attack (1)
- Increased awareness and education regarding the use of SCMs (3)
- SCMs requested specifically (3)
- LEED program (3)
- SCMs promoted by company (2)
- Increased emphasis on sustainability and the environment (2)
- Availability of a consistent product (1)
- Better SCM regulations (1)

Noticed no change (3)

Did not know direction of change (1)

SUPPLIERS – SCM PRODUCERS/SUPPLIERS

Noticed an increase (8)

- Increased awareness and education regarding the use of SCMs (3)
- Economy creating increased demand on the construction industry (2)
- Reduced Cost (1)
- Increased emphasis on sustainability and the environment (1)
- LEED program (1)

Noticed no change (3)

- Lack of support from government agencies (1)

BUILDERS

Noticed an increase (8)

- Increased awareness and education regarding the use of SCMs (5)
- Benefits and performance SCMs to enhance concrete properties (1)
- Increased emphasis on sustainability and the environment (2)
- SCMs being specifically demanded (1)
- LEED program (2)
- Economy creating increased demand on the construction industry (1)
- Reduced Cost (3)
- Cement shortages (1)

Did not know direction of change (1)

- SCMs not available in the North/Nunavut (1)

Q5: In your opinion, what are the main barriers that limit the use of SCMs? Please consider policy barriers, technical barriers, economic barriers and other barriers.

DESIGNERS

Policy Barriers (47)

- Government restrictions regarding the use of SCMs (13)
- No policy barriers to SCM use (9)
- Specifications and guidelines which do not reflect the attributes of SCMs (6)
- Lack of regulatory targets and government support (3)
- Policies of not using SCMs due to previous bad experiences (2)
- Lack of understanding among policymakers / policies (2)
- No financial incentives from the government (2)
- Risk management and litigation concerns from increase fly ash usage (1)
- Not enough dissipation of knowledge regarding SCMs through the government (1)
- Unawareness of existence of a policy issue regarding SCMs (1)
- City specifies recycled materials (1)
- Miscellaneous (3)
- “Don’t know” or “Not Sure” (2)

Technical Barriers (70)

- Amount of time required for SCMs to set for proper strength gain (22)
- Inconsistent and inferior quality SCM product (9)
- SCMs are harder to work with and more difficult to finish (8)
- Low Availability (6)
- Lack of information, research and education regarding the use of SCMs (6)
- Lack of knowledge regarding SCMs usage(5)
- Product durability questionable in freeze/thaw conditions (4)
- Need for uniform SCM standards (3)
- Greater skill and experience is necessary when using fly ash (2)
- Restraints on construction due to time tables limit SCM use (2)

- SCM properties mean there are limited circumstances in which they can be used (2)
- Public concerns of contamination due to the use of “waste material” (2)
- SCM usage is limited when building during colder seasons (1)
- Perception that SCMs will result in construction delays (1)
- “None” (2)

Economic Barriers (61)

- Costs due to increased time required when using SCMs (19)
- Cost of materials - i.e. fly ash (10)
- Cost of transport materials (6)
- Increased costs – general (5)
- Availability of SCMs (2)
- Savings are not passed on to the customer (2)
- Lack of cost savings using SCMs (2)
- Cost increases to growth in demand (2)
- No perceived benefit relative to costs related to using SCMs (2)
- Cost of storage silos (1)
- Inconsistent product (2)
- Cost increase due to increased technical demands for using SCMs (1)
- None (10)

Other Barriers (49)

- Lack of information and knowledge regarding the use of SCMs (10)
- Resistance to change in marketplace (8)
- Limited availability of SCMs (4)
- Lack of experience in the industry with proper use of SCMs (4)
- Slowing curing times (3)
- Lack of fly ash in some regions (2)
- Inferior or inconsistent quality of SCMs (2)
- Risk of litigation when using SCMs (2)
- Preference for non-SCM products (2)
- Lack of press regarding SCMs (1)
- No credit given to contractors for using SCMs (1)
- Lack of awareness of sustainability with using SCMs (1)
- Lack of support for standards for SCMs (1)
- None (5)
- “Don’t know” (1)

SUPPLIERS

Policy Barriers (30)

- Lack of understanding among policymakers / policies (4)
- Specifications and guidelines which do not reflect the attributes of SCMs (5)
- Policies of not using SCMs due to previous bad experiences (5)
- Government restrictions regarding the use of SCMs (4)
- Lack of regulatory targets and government support (2)

- Specifications over cement setting times (1)
- CSA has made it easier to use (1)
- None (4)
- "Yes" (2)
- "Don't know" or "Not Sure" (1)

Technical Barriers (37)

- Lack of information, research and education regarding the use of SCMs (9)
- Amount of time required for SCMs to set for proper strength gain (8)
- Inconsistent and inferior quality SCM product (4)
- Difficult to use in cold weather (3)
- Emissions devices at plants create inferior fly ash (2)
- Low Availability (1)
- Lack of knowledge regarding use SCMs (1)
- Number of silos at RMX plant (1)
- None (5)
- "Yes" (1)
- "Sometimes" (1)
- Miscellaneous (1)

Economic Barriers (30)

- Cost of materials - i.e. fly ash (7)
- Cost of transporting materials (5)
- Cost of storage silos (5)
- Cement producer Monopoly (1)
- US Producers (1)
- Increased costs – general (1)
- Availability of SCMs (1)
- Cost of storage space for customers (1)
- None (7)
- "Sometimes" (1)

Other Barriers (22)

- Availability of SCMs (5)
- Lack of information and knowledge regarding the use of SCMs (2)
- Cement producer monopoly (1)
- Inferior quality of fly ash (2)
- Lack of experience in the industry with proper use of SCMs (1)
- Lack of educational programs on the usage of SCMs (1)
- Preference for non-SCM products (1)
- Rail service monopoly (1)
- Specifications not allowing SCM use (1)

BUILDERS

Policy Barriers (6)

- Specifications and guidelines which do not reflect the attributes of SCMs (1)
- Government restrictions regarding the use of SCMs (1)
- SCM properties mean there are limited circumstances in which they can be used (2)
- None (2)
- "Yes" (1)

Technical Barriers (6)

- Lack of information, research and education regarding the use of SCMs (1)
- SCM properties mean there are limited circumstances in which they can be used (2)
- Lack of substitutable materials (1)
- "Yes" (2)

Economic Barriers (9)

- Increased costs – general (3)
- Cost of materials - i.e. fly ash (1)
- Perceived increased costs (1)
- Cost increases to growth in demand (1)
- Availability of SCMs (1)
- None (1)
- "Yes" (1)

Other Barriers (8)

- Lack of information and knowledge regarding the use of SCMs (1)
- Resistance to change in marketplace (2)
- Cement producer monopoly (1)
- Inferior or inconsistent quality of SCMs (1)
- Lack of experience in the industry with proper use of SCMs (1)
- Lack of educational programs on the usage of SCMs (1)
- Miscellaneous (1)

Q6: In your opinion, should anything be done to increase acceptance and use of SCMs? Please specify.

DESIGNERS (72)

- Education (contractors, engineers, general public) about SCMs (24)
- Publications addressing SCM performance and testing results (12)
- Increased marketing of SCMs (11)
- Incentives for owners and suppliers to use SCMs (5)
- Work with government to develop and promote SCM usage (3)
- Mandatory requirements/legislation for minimum SCM content (3)
- Promotion of SCMs' environmental benefits (2)
- Standards for SCM mixes and quality (1)

- Assurances of SCM availability (2)
- CSA composition recommendations (1)
- Development of a de-icer scaling resistance test (1)
- Provincial greenhouse gas targets (1)
- Improved distribution of information regarding SCMs (1)
- Development of SCMs with shorter curing times (1)
- Consultation with user groups (1)
- Increased SCM testing (1)
- Development of SCM guidelines (1)
- Technical training on SCM usage (1)
- Increase supply of SCMs (1)
- Miscellaneous (8)

SUPPLIERS (37)

- Education (contractors, engineers, general public) about SCMs (13)
- Mandatory requirements/legislation for minimum SCM content (5)
- Publications addressing SCM performance and testing results (5)
- Increased marketing of SCMs (5)
- Work with government to develop and promote SCM usage (5)
- Promotion of SCMs' environmental benefits (3)
- Standards for SCM mixes and quality (1)
- Provincial greenhouse gas targets (1)
- Miscellaneous (6)

BUILDERS (9)

- Increased marketing of SCMs (3)
- Education (contractors, engineers, general public) about SCMs (1)
- Mandatory requirements/legislation for minimum SCM content (1)
- CSA composition recommendations (1)
- Removal of the silica from SCMs (1)
- Lower the costs of SCMs (1)
- Miscellaneous (1)

Q6a: Do you have any recommendations for changing existing specifications for SCM use?

DESIGNERS (48)

- Change specifications based on regional circumstances (3)
- Create specifications through SCM (2)
- Data for long term engineering (2)
- Greater assurances of SCM performance with higher SCM concentrations (1)
- Note the technical limitations (i.e. in cold weather) of SCMs (1)
- Increased standard strengthening specifications (1)
- Promotion of SCMs through governments and associations (1)
- Create specifications which are "results driven" (1)
- Increased education about SCMs (1)

- Work through technical committee (1)
- Research on fasting curing SCMs (1)
- Examples of projects using SCMs (1)
- Need to note the technical limitations of SCMs - i.e. cold weather (1)
- Mandate the use of fly ash (1)
- Miscellaneous (6)
- "Not at the present time" / "Don't know" / "No" (26)

Q7: In your opinion, what types of programs are most effective for promoting SCMs? (Other)

DESIGNERS (8)

- Demonstrations highlighting best practices (2)
- Training as part of a technical college curriculum (1)
- Information on the Internet (1)
- Reasonable pricing (1)
- Promote the benefits of SCMs to the general public (1)
- Develop an SCM brand similar to "Energy Star" (1)
- Do case studies on the benefits of SCMs (1)
- Make SCM concrete mandatory (1)

SUPPLIERS (5)

- Regulation (1)
- Ensure adequate supply (1)
- Demonstrations highlighting best practices (1)
- Training as part of a technical college curriculum (1)
- Require contracts adhering to SCM specifications (1)
- Information on the Internet (1)

BUILDERS (2)

- Promote the "green" advantages of SCMs (1)
- Information on the Internet (1)

Q8: Are you aware of any existing programs that promote SCM use?

DESIGNERS

- EcoSmart programs and research (16)
- LEED program (8)
- NRC Canada (1)
- CIRCA Programs (1)
- CAC SCM Programs (1)
- PCA Programs (1)
- Cement Association seminars (1)

SUPPLIERS

- LEED program (10)

- EcoSmart programs and research (6)
- CIRCA Programs (4)
- NRC Canada (2)
- ACAA (1)
- APRMCA (1)
- CRMCA (1)

BUILDERS

- LEED program (1)
- Saskatchewan road stabilization programs (1)

Q9: Are there any types of information not available that would enable informed decisions regarding the use of SCMs?

DESIGNERS

- Information from testing and field experience (13)
- Information regarding impacts on construction schedules (4)
- Standardized specifications for SCM concrete (3)
- Increase information distribution and availability (3)
- Information on SCM durability (2)
- Data on timelines for SCMs in differing climates (1)
- Demonstration video (1)
- LEED Reference Guide (1)
- Program to acquire basic knowledge of SCM benefits and applications (1)

SUPPLIERS

- Information from testing and field experience (3)
- Standardized specifications for SCM concrete (3)
- Information on SCM durability (2)
- Guidelines on SCM use (4)
- Demonstration video (1)
- LEED Reference Guide (1)
- Program to acquire basic knowledge of SCM benefits and applications (1)

BUILDERS

- Standardized specifications for SCM concrete (3)
- Increase information distribution and availability (2)

Q12: Do you have any final comments or suggestions?

DESIGNERS

- Further research and information is needed for SCMs (7)
- The industry needs to look at SCMs in light of environmental concerns (2)
- It is important to address issues stemming from GHGs (2)
- A wider distribution of information / promotion of SCMs is needed (2)
- SCMs need to be included in college/university curriculums of engineers and architects (2)
- Hard to change attitudes in the industry (1)
- Education of industry is vital to SCMs (1)
- Need to find new/local SCMs (1)
- SCMs are too costly to use (1)
- SCMs should initial be used where there is minimal risk (1)
- It is important to market SCMs appropriately to the “green” community (1)
- SCMs are the “way to go” (1)
- It can be challenging to find places to use SCMs (1)
- Would like to learn more about SCMs (1)
- SCM training programs are needed (1)
- Miscellaneous (7)

SUPPLIERS

- Belief that GHG benefits of SCMs are overstated (2)
- SCMs would reduce the amount of energy use to produce construction materials (2)
- Consumer education regarding SCMs is needed (1)
- Education of industry is vital to SCMs (1)
- GHG credits need to be given at a local level when SCMs are use (1)
- Major motivator in using SCMs is Environmental and LEED certification for the owner (1)
- SCMs should be further explored (1)
- The industry is hard to change (1)
- Miscellaneous (7)

SUPPLIERS

- Industry is hard to change (1)
- Belief that GHG benefits of SCMs are overstated (1)
- SCMs are the first step – more steps left to become an environmentally friendly industry (1)
- SCMs should be explored more (1)
- SCMs should incorporate more local materials (1)
- Miscellaneous (3)

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