Environment and Climate Change Canada
Environnement et Changement climatique Canada
Canada

CODE OF PRACTICE FOR THE ENVIRONMENTAL MANAGEMENT OF ROAD SALTS:

OVERVIEW OF DATA REPORTED FOR WINTERS 2013-2014, 2014-2015, 2015-2016 AND 2016-2017 IN THE CONTEXT OF NATIONAL TARGETS

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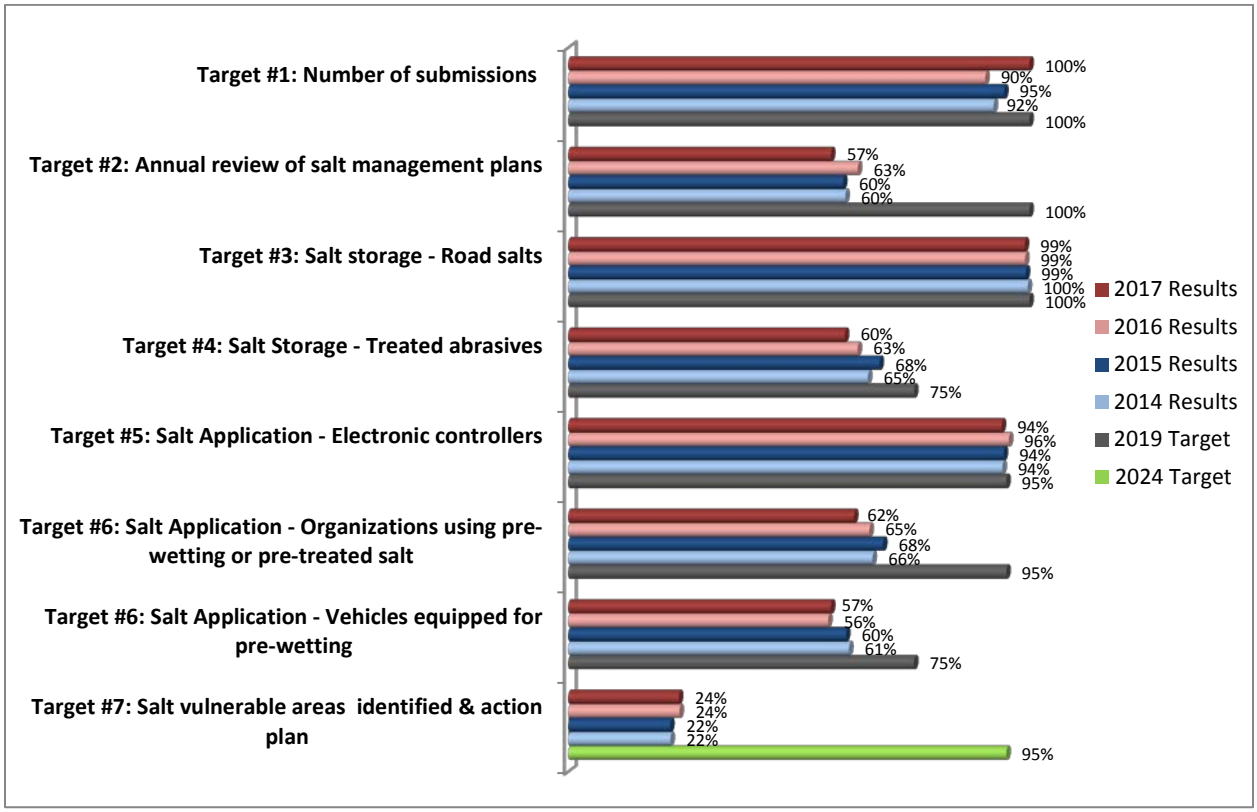
In This Report

Overview of Reported Data in the Context of National Targets

In December 2014, Environment and Climate Change Canada set seven Performance Indicators and National Targets for the Code of Practice for the Environmental Management of Road Salts (the Code).

The following results (Figure A) have been reported by federal, provincial, municipal and private road organizations that adopted the Code and are compared with the National Targets set for 2019 (Target #7 is set for 2024). Data submitted in annual reports are compiled and analyzed for a winter period, which is generally from November of one year to April of the next year. Throughout the report, a reporting year is represented by the final year of that winter (e.g. 2016 represents the winter starting in 2015 and ending in 2016). Note that some year-to-year variation in results exists due to variance in the number of reports submitted annually.

Figure A: Summary results for performance and comparison to national targets



Highlights: 2017 Reported Data in the Context of National Targets

Results reported for winter **2016-2017**:

- 225 road organizations, including 9 provinces, 1 territory, 201 municipalities, 5 private roadways organizations, 7 national parks and 2 other federal organizations, reported under the Code (target is 220).
- 57% annually reviewed their road salt management plan (target is 100%).
- 99% of their road salts are under a permanent roof and on impermeable pads (target is 100%).
- 60% of their treated abrasives are covered (target is 75%).
- 94% of their vehicles are equipped with groundspeed electronic controllers (target is 95%).
- 62% are using pre-wetting or pre-treated salts (target is 95%).
- 57% of their vehicles are equipped for pre-wetting (target is 75%).
- 24% of road organizations have identified their salt-vulnerable areas and have prepared an action plan (target is 95%, set for 2024).

Highlights: 2016 Reported Data in the Context of National Targets

Results reported for winter **2015-2016**:

- 199 road organizations, including 8 provinces, 1 territory, 176 municipalities, 5 private roadways organizations, 6 national parks and 3 other federal organizations, reported under the Code (target is 220).
- 63% annually reviewed their road salt management plan (target is 100%).
- 99% of their road salts are under a permanent roof and on impermeable pads (target is 100%).
- 63% of their treated abrasives are covered (target is 75%).
- 96% of their vehicles are equipped with groundspeed electronic controllers (target is 95%).
- 65% are using pre-wetting or pre-treated salts (target is 95%).
- 56% of their vehicles are equipped for pre-wetting (target is 75%).
- 24% of road organizations have identified their salt-vulnerable areas and have prepared an action plan (target is 95%, set for 2024).

Highlights: 2015 Reported Data in the Context of National Targets

Results reported for winter **2014-2015**:

- 208 road organizations, including 8 provinces, 184 municipalities, 5 private roadways organizations, 8 national parks and 3 other federal organizations, reported under the Code (target is 220).
- 60% annually reviewed their road salt management plan (target is 100%).
- 99% of their road salts are under a permanent roof and on impermeable pads (target is 100%).
- 68% of their treated abrasives are covered (target is 75%).
- 94% of their vehicles are equipped with groundspeed electronic controllers (target is 95%).
- 68% are using pre-wetting or pre-treated salts (target is 95%).
- 60% of their vehicles are equipped for pre-wetting (target is 75%).
- 22% of road organizations have identified their salt-vulnerable areas and have prepared an action plan (target is 95%, set for 2024).

Highlights: 2014 Reported Data in the Context of National Targets

Results reported for winter **2013-2014**:

- 202 road organizations, including 8 provinces, 180 municipalities, 4 private roadways organizations and 10 national parks reported under the Code (target is 220).
- 60% annually reviewed their road salt management plan (target is 100%).
- 100% of their road salts are under a permanent roof and on impermeable pads (target is 100%).
- 65% of their treated abrasives are covered (target is 75%).
- 94% of their vehicles are equipped with groundspeed electronic controllers (target is 95%).
- 66% are using pre-wetting or pre-treated salts (target is 95%).
- 61% of their vehicles are equipped for pre-wetting (target is 75%).
- 22% of road organizations have identified their salt-vulnerable areas and have prepared an action plan (target is 95%, set for 2024).

Annual Reporting Under the Code

The Code of Practice for the Environmental Management of Road Salts (the Code) was developed in 2004 to assist municipal and provincial road organizations to better manage their use of road salts in a way that reduces the harm to the environment while maintaining roadway safety. The Code recommends that road organizations that use over 500 t/year of salt or who have salt-vulnerable areas in their territory review their existing winter maintenance operations to improve practices and reduce adverse impacts of salt releases in the environment. This includes the development and implementation of salt management plans identifying actions they will take to improve practices in salt storage, use of salts on roads, snow disposal and protection of salt-vulnerable areas. In addition, the Code requires road organizations to provide an annual report[1] on the progress achieved.

Of note, in Quebec, a Strategy for the Environmental Management of Road Salts was launched in 2010. Every administration that manages and maintains roads in Quebec is invited to participate in the Strategy on a voluntary basis. As a result, the federal Code is not implemented in Quebec. However, the general objectives of the Code and of the Strategy are similar. As of winter 2014, 13 municipalities have joined the Quebec Department of Transport in this initiative. Various statistics on winter maintenance practices used in Quebec are available on the Strategy website (www.selsdevoirie.gouv.qc.ca; French only). According to Quebec's latest report on the reporting organizations (2017), 98% of road salt storage sites have a permanent roof, 98% have an impermeable surface and 81% of vehicles are equipped with electronic spreader controls.

Performance Indicators and National Targets

The Five-year Review of Progress [2] (2005–2009) to measure the effectiveness of the Code was published in April 2012 and is available online. Based on the review, Environment and Climate Change Canada recommended maintaining the Code and encouraged road organizations to continue improving their salt management. However, at the time of the first review, the lack of targets created challenges in determining whether the objective of the Code had been achieved. It was recommended that the list of performance indicators for future evaluations be examined to ensure that they reflect key components of the Code and current techniques in winter maintenance.

In 2014, Environment and Climate Change Canada published Performance Indicators and National Targets for the Code of Practice for the Environmental Management of Road Salts for

[1] The information is submitted directly to Environment and Climate Change Canada through its Single Window Information Manager System (ECCC's SWIM) by June 30 of each year.

[2] See report: *Five Year Review of Progress: Code of Practice for the Environmental Management of Road Salts* (Environment Canada, 2012).

the implementation of best practices against which achievement of the road organizations and the success of the Code can be evaluated. The main objective for setting national targets is to increase environmental protection. All road organizations are expected to reach a minimum level of progress in the implementation of best practices to prevent and reduce negative impacts from road salts. National targets help to monitor progress in specific areas of the Code and form the basis for the next evaluation of the Code.

There are seven performance indicators (with six targets set for 2019 and one for 2024) that fall under four main activities of the Code (adoption of the Code, salt storage, salt application and salt-vulnerable areas) as summarized and illustrated above (Figure A). The following results are based on the analysis of data reported annually by road organizations under the Code since 2009 where available, and therefore include data reported before and after the publication of the national targets in 2014.

It should be noted that, for 2017, due to the increase in number of organizations that reported, the percentages of organizations that met some of the targets decreased, but the actual number of organizations that met targets may have increased. For example, for Target #2, the number of organizations that reviewed their salt management plans increased by four from 2016, but because more organizations submitted reports, the percentage of organizations that met the target decreased by 6%.

- **Performance indicator 1: "Submission of annual reports"** represents the number of road organizations reporting regularly (Figure B). The purpose of this indicator is to increase the level of implementation of the Code as achieved before 2009, and to inform on best practices in road salt management. Data reported prior to 2009 are referenced in this indicator to illustrate progress over time. The number of submissions has increased since 2011 and exceeded the target in 2017. Table 1 also presents the breakdown of organizations by type that have reported since winter 2014.

Figure B: Number of reports submitted by road organizations to Environment and Climate Change Canada

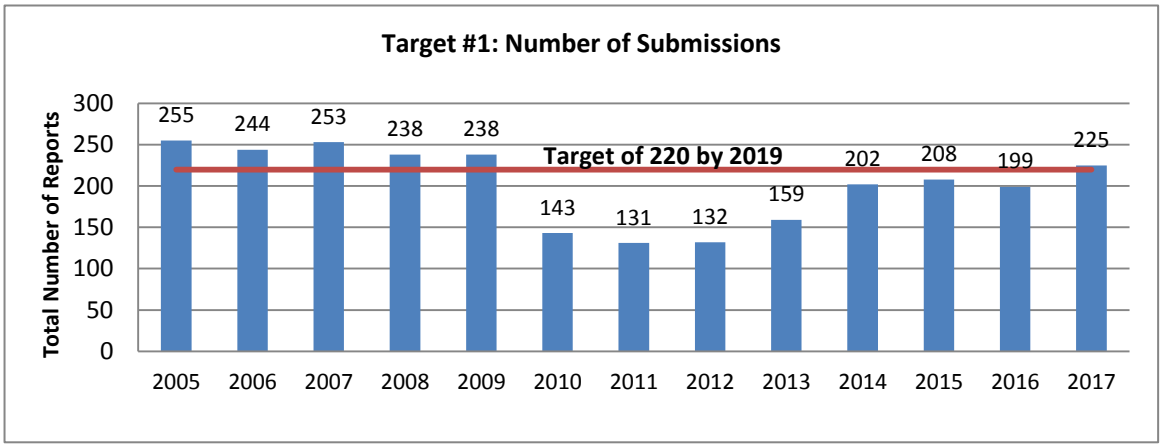
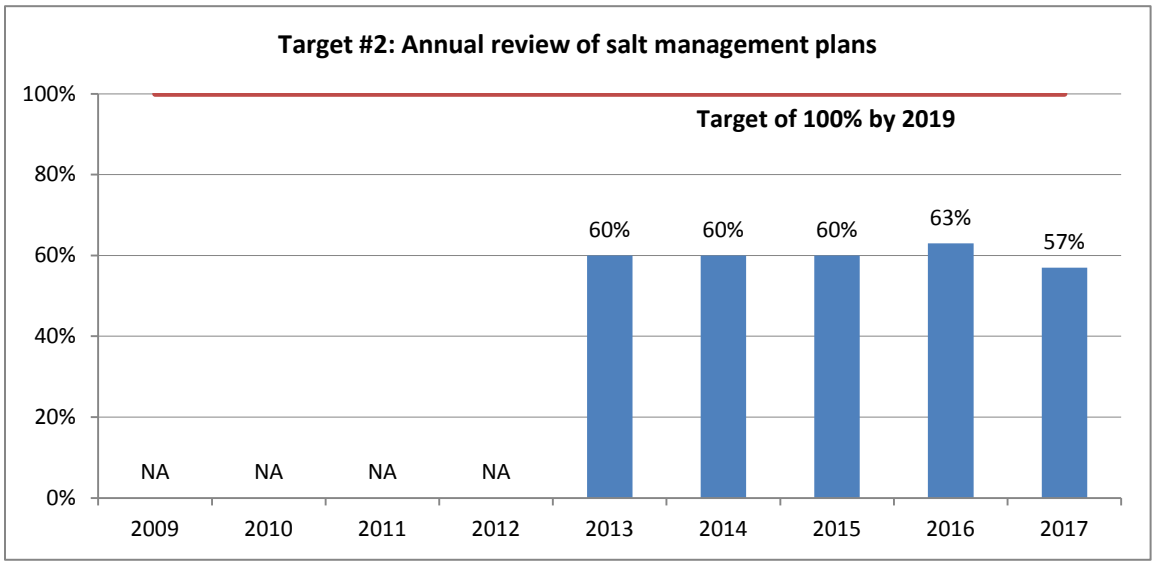


Table 1: Breakdown of the type of road organizations that have reported under the Code for winter seasons 2014, 2015, 2016 and 2017

Type of road organization	2014	2015	2016	2017
Provinces and territories	8	8	9	10
Municipalities	180	184	176	201
National parks and other federal organizations	10	11	9	9
Private organizations	4	5	5	5
Total number of reporting organizations	***202***	***208***	***199***	***225***

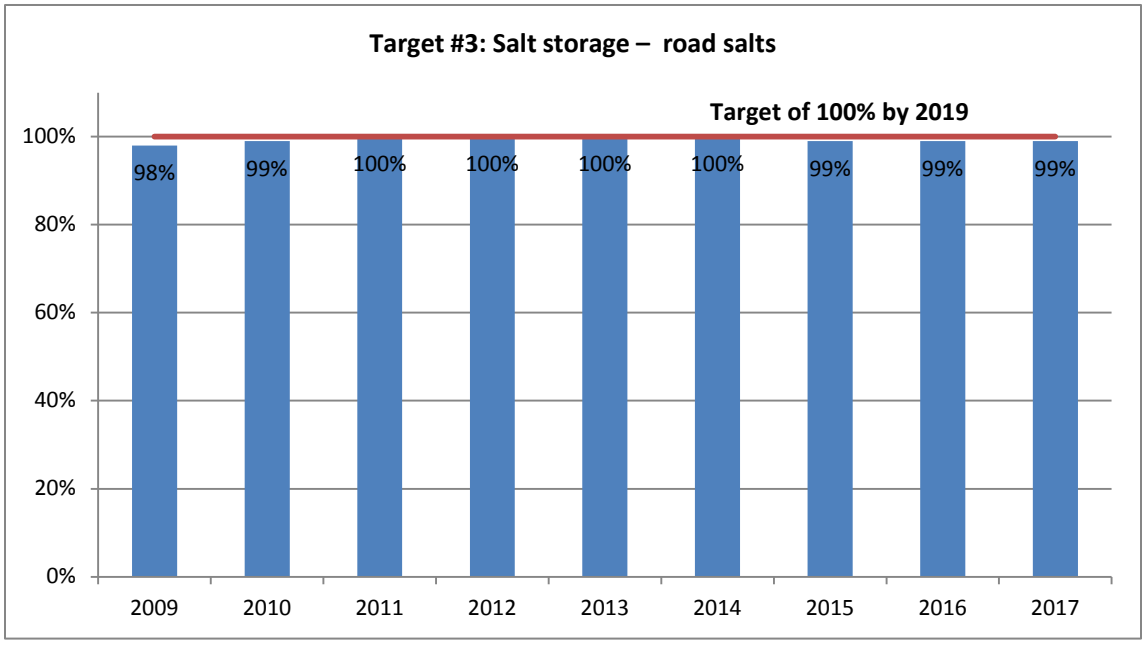
- **Performance indicator 2: "Annual review of salt management plan"** represents the percentage of road organizations that annually review their salt management plan (Figure C). The objective of this indicator is to ensure that planning is current and allows for continuous improvement. Road organizations should revisit their salt management plan at the end of each winter in order to identify shortcomings, issues and areas where improvements are needed prior to the start of the next winter season. Information on the annual review of salt management plans is not available for 2009-2012. Results for these years are therefore not included.

Figure C: Percentage of road organizations that review their salt management plan



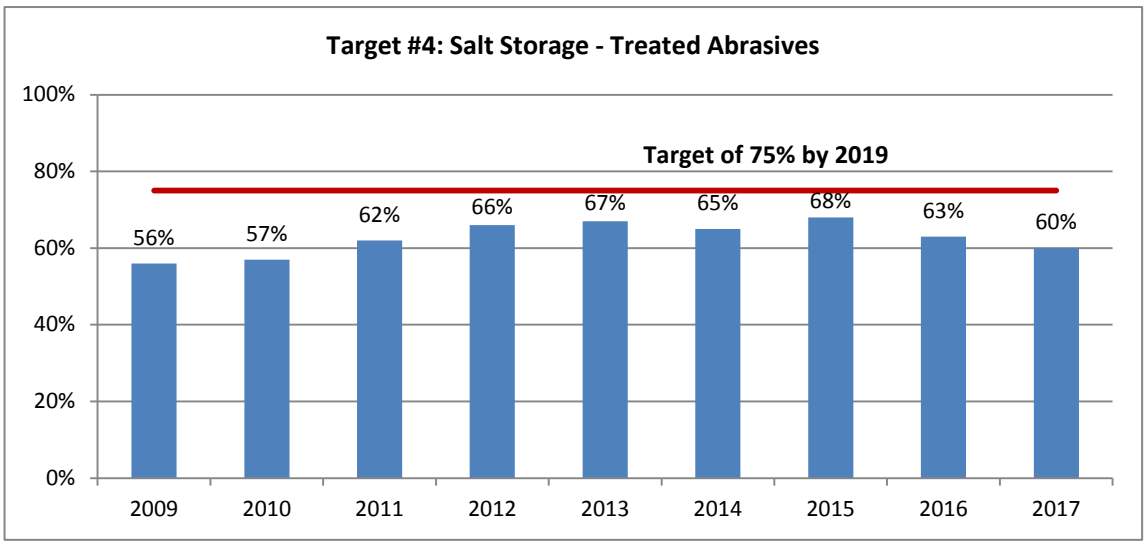
- **Performance indicator 3: "Storage of road salts"** represents the percentage in tonnes of road salts stored under a permanent roof and on impermeable pads (Figure D). The objective of this indicator is to ensure that road organizations have committed to managing their material storage facilities and that best practices are applied at point sources.

Figure D: Percentage of road salts stored under a permanent roof and on impermeable pads



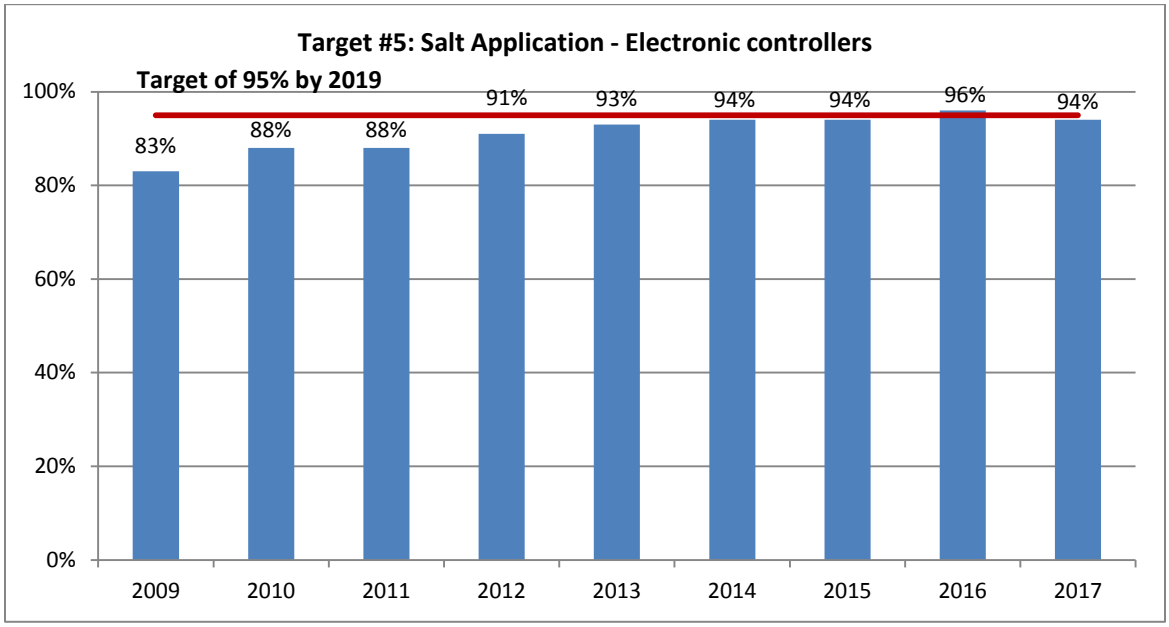
- **Performance indicator 4: "Storage of treated abrasives"** represents the percentage in tonnes of treated abrasives (blended sand and salt) that are stored under cover (Figure E). The objective of this indicator is to ensure that road organizations properly cover their treated abrasives in storage facilities and that best practices are applied at point sources.

Figure E: Percentage of treated abrasives stored under cover



- **Performance indicator 5: "Groundspeed electronic controllers"** represents the percentage of vehicles equipped with groundspeed electronic controllers (Figure F). The objective of this indicator is to ensure that salt is applied at a proper rate regardless of the speed of the truck being used to spread the salt and that salt stops discharging when the truck is stopped. Use of this technology is expected to become a core practice for all organizations. The percentage of vehicles equipped with groundspeed electronic controllers has increased since 2009 and reached the target in 2016.

Figure F: Percentage of vehicles equipped with groundspeed electronic controllers



- **Performance indicator 6: "Optimization of salt application"** indicates if organizations are adopting practices that enhance their salt application techniques either by using pre-wetting or pre-treated salts (Figure G) or by increasing their pre-wetting capacity (Figure H). The objective of this indicator is to ensure that organizations are using advanced technologies such as pre-wetting to reduce the use of salts and pre-treated materials proven to be a cost-effective alternative to road salts with similar results. While data for use of pre-wetting are available for all years since 2009, data for use of pre-treated salts are not available for 2009-2012. Results for these years are therefore not included.

Figure G: Percentage of road organizations using pre-wetting or pre-treated salts

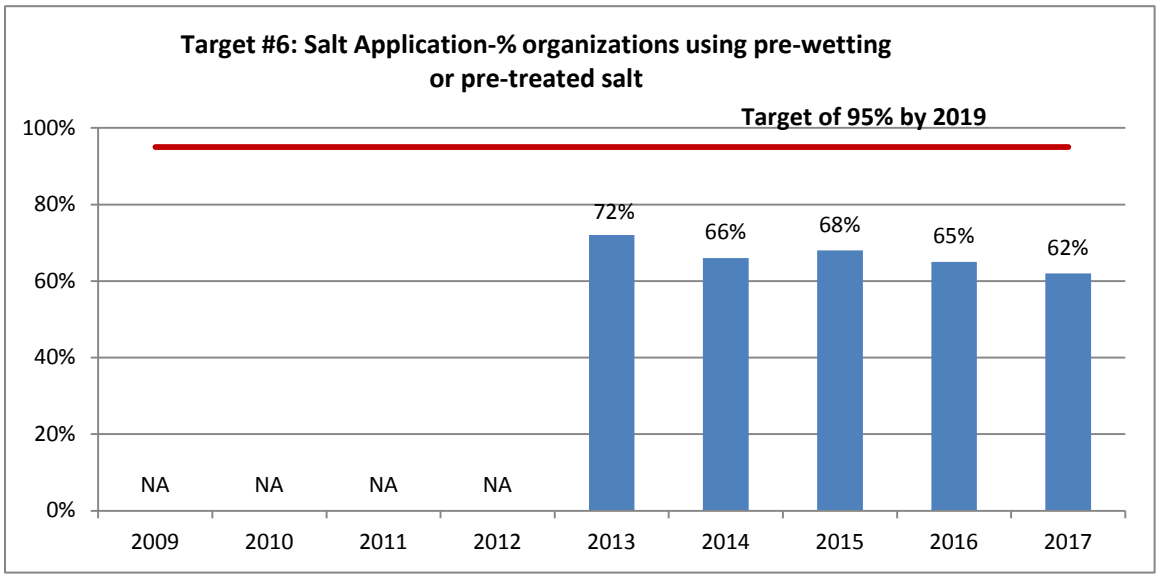
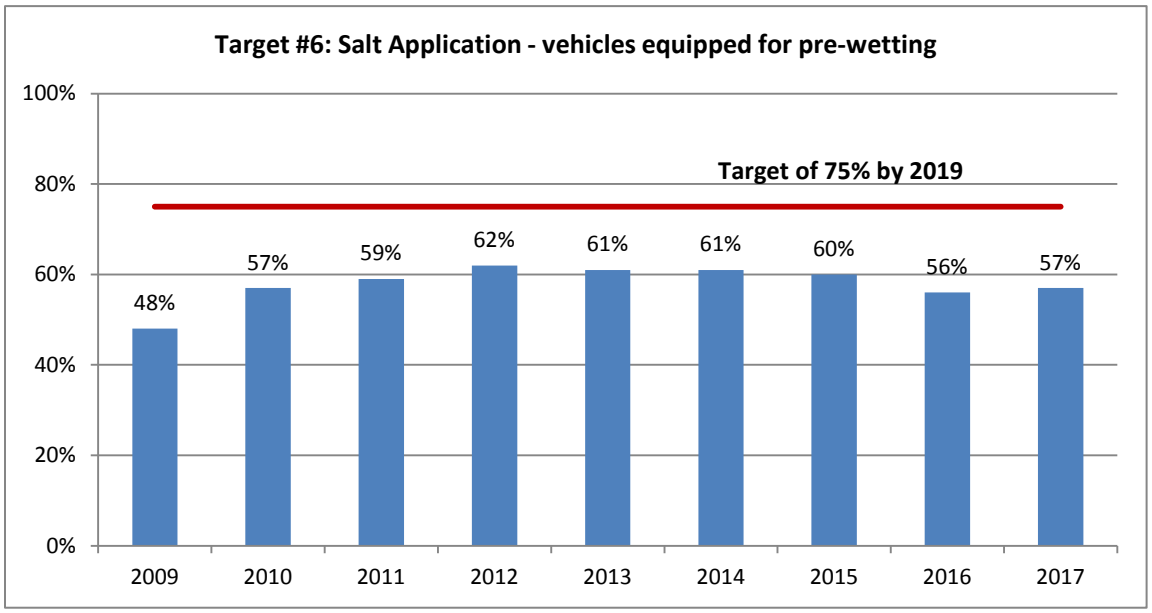


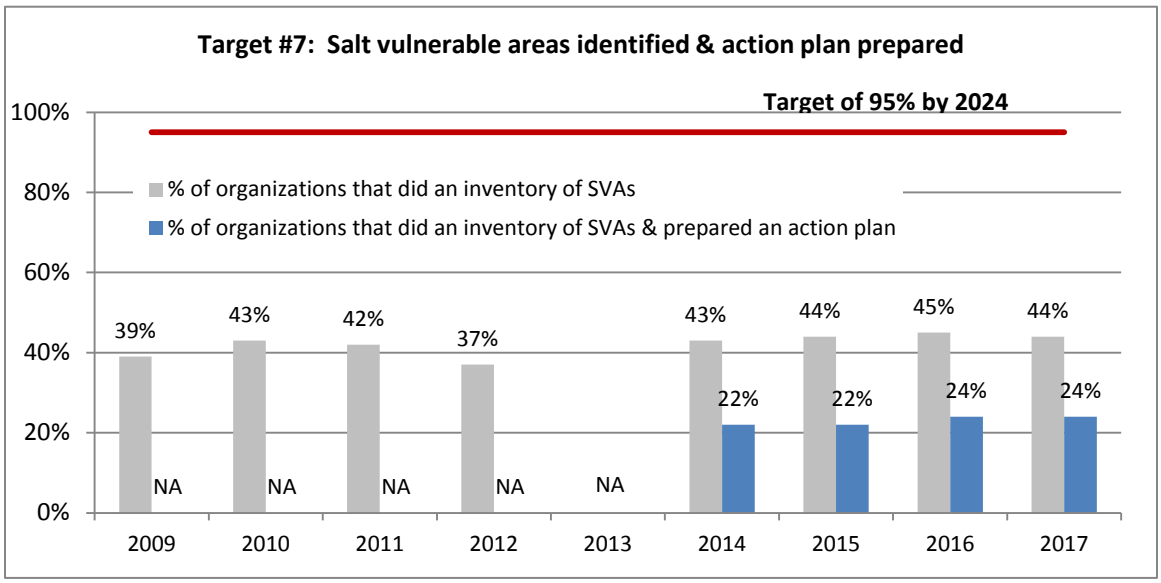
Figure H: Percentage of vehicles equipped for pre-wetting



- **Performance indicator 7: "Salt-vulnerable areas"** indicates if organizations have identified salt-vulnerable areas and if an action plan has been prepared with the purpose of protecting those areas that are particularly sensitive to road salts. While information on identification of salt-vulnerable areas is available for all years except 2013 (due to data collection inconsistencies), information on preparation of an action plan is not

available for 2009-2013. Figure I presents the percentage of road organizations that have identified salt vulnerable areas, as well as the percentage of road organizations that have met the performance indicator (both identifying the vulnerable areas and preparing action plans). To help achieve this target, Environment and Climate Change Canada is developing additional guidance to establish common standards for identification of salt-vulnerable areas. As such, it should be noted that the target for this indicator is set for 2024.

Figure I: Percentage of road organizations that have identified salt vulnerable areas and prepared an action plan



Progress Towards the National Targets

Setting national targets offers transparency in the expected performance level from road organizations and provides a basis for conducting a second review of the effectiveness of the Code. National targets assist road organizations in prioritizing their ongoing efforts in the management of road salts. Environment and Climate Change Canada will continue to promote the implementation of the Code with the stakeholders, consisting of provincial and municipal road authorities, federal and provincial governments, related associations, industry, environmental non-governmental organizations, and academics, in order to help reach the national targets.

The summary of the results of the Code since 2014, provided in Figure A, shows the progression in achieving the national targets over time.

Contact Us

For questions about the Code or for more information about salt management, please contact us.

Additional information can be obtained at:

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