

# Self-Evaluation Guide

*Environmental Program of the St. Lawrence and  
Great Lakes Marine Industry*

**- Ports and Terminals-**



**PRINT THE GUIDE**

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The *Environmental Program of the St. Lawrence and Great Lakes Marine Industry* requires a voluntary commitment from participating companies in both Canada and the U.S. to tangibly and measurably strengthen their environmental performance with respect to six priority environmental issues:

- AQUATIC INVASIVE SPECIES
- POLLUTANT AIR EMISSIONS: AIR EMISSIONS (SO<sub>x</sub>), AIR EMISSIONS (NO<sub>x</sub>) (SHIPOWNERS ONLY)
- GREENHOUSE GASES
- CARGO RESIDUES
- OILY WATERS (SHIPOWNERS ONLY)
- CONFLICTS OF USE (PORTS AND TERMINALS ONLY)

The environmental program has been in effect since January 1, 2008. During the first year of implementation<sup>1</sup>, the program's participants must use this self-evaluation guide to assess their environmental performance for 2008. This is to be done by identifying the written documentation that can objectively and verifiably prove the level that participants have attained for each environmental issue in which they are involved. Green Marine does not require any written proof for this self-evaluation process. **More specifically, participants must complete, sign and date the *Evaluation Summary* (page 7) and return it to the Green Marine secretariat at the beginning of 2009<sup>2</sup>.**

The self-evaluation guide is also designed to support an external evaluation process, which will come into effect during the second year of the environmental program's implementation, i.e. in 2009, with reporting done in 2010. Thus, participants will have to justify their performance by means of an external verification process supported by documentation.

Given that the program is still in its first year of implementation, the self-evaluation guide (and the program itself) will likely undergo a number of adjustments between the issuance of the first self-evaluation report and the second. Participants are therefore invited to send the Green Marine secretariat their suggestions on how to improve these documents during the revision process.

**To save the data you have entered onto this interactive form, you must have first installed **Acrobat Reader 7.0 or 8.0** on your computer.**

<sup>1</sup> The self-evaluation period begins on January 1, 2008 and ends on December 31, 2008. Unless otherwise specified, all the data that is required for inventories and management plans covers this period exclusively.

<sup>2</sup> Participants will be informed of the deadline for submitting their self-evaluation.

## Interpretation of the Guide

- In no case should the criteria required to attain a particular level affect the safety of workers. If safety is compromised by the adoption of a new practice in a particular case, such practice is automatically considered as non-applicable. In no case may a new practice be contrary to the requirements of a regulatory authority.
- For particular cases in which a specific criteria cannot be realistically fulfilled, the company may request an exemption, which must be accompanied by a written justification.
- In order to attain particular level, all of the necessary criteria for attaining the level must have been fulfilled. It is similarly essential that all of the preceding levels have been attained.
- The self-evaluation process is limited to the activities taking place in the St. Lawrence and Great Lakes geographic zone (river, estuary and gulf).
- Please note that you cannot enter data into the tables found in the annexes as they are only samples. We suggest that you create new tables using Excel software in order to enter your data.
- For all questions regarding interpretations of the self-evaluation guide, please contact David Bolduc, the Green Marine coordinator, at (418) 649-6004 or at [info@Green-Marine.org](mailto:info@Green-Marine.org).

**How should the evaluation be documented?**

Each time a participant fulfills one of the criteria associated with a performance indicator, he/she must justify this evaluation. In order to do so, the participant must identify the written documentation that will serve as the objective and verifiable proof of having fulfilled the said criteria when the external verification process is implemented in 2009. In other words, the participant must be able to identify (and not necessarily provide) the documentation in question. As far as the self-evaluation guide is concerned, it will be sufficient for the participant to indicate where such proof can be found (e.g. internal communication directives, Excel or other spreadsheets, hyperlinks to electronic information, inspection reports, photos, technical equipment specifications, etc.)

**When a performance indicator requires participants to develop inventories or management plans, must such documents be submitted to Green Marine?**

No. The Green Marine secretariat does not receive documents, and the data produced by participants is to remain confidential for competitive reasons. It is only the level attained for each issue that is submitted to Green Marine.

It is possible that specific data will be required for publication in Green Marine's future annual reports. However, no information will be divulged without the specific consent of the participant.

**How is it possible to know whether a company respects the legislation and the regulations in effect?**

For each of the issues applicable to your operations:

- Ensure that your company is aware of the applicable regulatory requirements.
- Identify the persons in charge of the application of these requirements at the operational level.
- Ensure that these persons have the means (training, tools or equipment, availability) to effectively comply with the regulatory requirements.
- Promptly rectify any accidental and temporary incidents of non-compliance. Keep a record of all inspections conducted / infractions noted for the subject issues in the subject region.
- Keep a track record of these points for reporting and audit purposes.

# Definitions

## Program

*Environmental Program of the St. Lawrence and Great Lakes Marine Industry* (as periodically updated).

## Year

Civil year (January 1 - December 31)

# 7 Summary of the Evaluation

| Environmental Issues   | Level reached   |
|--|---|
| <b>1) AQUATIC INVASIVE SPECIES</b><br>a) Registry of species                   | <input type="radio"/> YES<br><input type="radio"/> NO<br><input type="radio"/> N.A. |
| <b>1) AQUATIC INVASIVE SPECIES</b><br>b) Sampling of sediments before dredging | <input type="radio"/> YES<br><input type="radio"/> NO<br><input type="radio"/> N.A. |
| <b>2) GREENHOUSE GASES</b>   | <input type="text"/>  |
| <b>3) CARGO RESIDUES</b>   | <input type="text"/>  |
| <b>4) CONFLICTS OF USE</b>   | <input type="text"/>  |

This confirms that the information contained in the *Summary of the Evaluation* matches the levels that the company has attained for the following environmental issues covered by the *Environmental Program of the St. Lawrence and Great Lakes Marine Industry*:

Signed on (date)

Name of the company

Signed by the President of the Green Marine Participant Company

Please complete the *Summary of the Evaluation* and return it to the Green Marine secretariat to:  
 271 de l'Estuaire, Québec QC CANADA G1K 8S8 or fax it to: (418) 648-4627.

## 1) AQUATIC INVASIVE SPECIES

### Objective

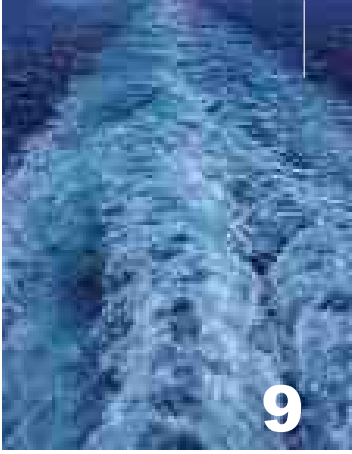
Reduce the risk of introducing and propagating aquatic organisms and harmful pathogens by means of ship's ballast water.

## 1) AQUATIC INVASIVE SPECIES

| Has the port or the company fulfilled the following criteria?  | Status   | Proof / Justification of compliance |
|--|--|-------------------------------------|
| <p>Launching of a registry of invasive species found on port territory, to be conducted in collaboration with the government organization carrying out sampling activities.</p> <p>Note: The Green Marine secretariat will inform participants of the steps to be taken in this respect once the necessary collaboration agreements have been concluded with the appropriate government authorities.</p>   | <p><input type="radio"/> YES<br/> <input type="radio"/> NO<br/> <input type="radio"/> N.A.</p> |                                     |
| <p>Testing of sediments before every dredging operation to verify the absence of invasive species.</p> <p>Note: This criterion will come into effect as soon as the port has at its disposal a registry of the invasive species on its territory. The information contained in this registry will allow participants to determine where and how frequently sampling must be done in order to ensure that dredging sediments are managed in a way that minimizes the risks of propagating invasive species.</p> | <p><input type="radio"/> YES<br/> <input type="radio"/> NO<br/> <input type="radio"/> N.A.</p> |                                     |

NOTE: These practices are not part of a performance indicator, and participants are therefore not required to link their performance with any particular level. Nevertheless, participants should indicate whether or not these practices have been implemented.





**2) GREENHOUSE GASES**

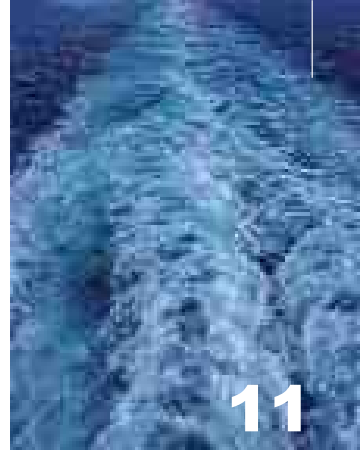
**Objective**  
To reduce greenhouse gas (GHG) emissions.

**2) GREENHOUSE GASES - LEVEL 1**

| Does the port or company comply with existing regulatory requirements? | Status  | Proof / Justification of compliance |
|--|---|-------------------------------------|
|  | <input type="radio"/> YES<br><input type="radio"/> NO<br><input type="radio"/> N.A. |                                     |

**2) GREENHOUSE GASES - LEVEL 2**

| Has the port or the company distributed an <u>internal directive</u> to ensure that each of the following practices is applied?  | Status  | Proof / Justification |
|--|---|-----------------------|
| <u>Ports and terminals:</u>  |   |                       |
| Limit idling of vehicle engines.   | <input type="radio"/> YES<br><input type="radio"/> NO<br><input type="radio"/> N.A. |                       |
| Promote sustainable transportation practices by employees.<br><br>Examples: Incentives for public transport and carpooling, reorganization of business travel, installation of bicycle racks, etc. | <input type="radio"/> YES<br><input type="radio"/> NO<br><input type="radio"/> N.A. |                       |
| Implement measures to reduce congestion and idling during periods of heavy activity.<br><br>Note: This relates to truck traffic.   | <input type="radio"/> YES<br><input type="radio"/> NO<br><input type="radio"/> N.A. |                       |
| <u>Ports only:</u>   |   |                       |
| Inform or, when necessary, issue warnings to ships which emit excessive amounts of smoke.  | <input type="radio"/> YES<br><input type="radio"/> NO<br><input type="radio"/> N.A. |                       |
| Issue notices encouraging ships to use low sulphur fuel in auxiliary engines.  | <input type="radio"/> YES<br><input type="radio"/> NO<br><input type="radio"/> N.A. |                       |

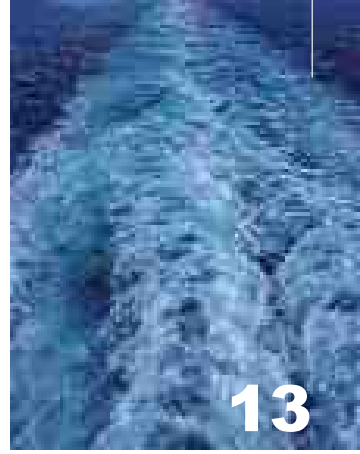


## 2) GREENHOUSE GASES - LEVEL 3

| Has the port or the company fulfilled the following criteria?   | Status   | Proof / Justification |
|---|--|-----------------------|
| <p>Completion of an annual report on GHG emissions.</p> <p>Note: See Annex 1-A.</p>   | <p><input type="radio"/> YES</p> <p><input type="radio"/> NO</p> <p><input type="radio"/> N.A.</p> |                       |
| <p>Adoption of an energy performance plan that has quantifiable objectives, and which formally incorporates the best practices required to achieve level 2.</p> <p>Note: See Annex 1-B.</p> | <p><input type="radio"/> YES</p> <p><input type="radio"/> NO</p> <p><input type="radio"/> N.A.</p> |                       |

**2) GREENHOUSE GASES - LEVEL 4**

| <b>Has the port or the company fulfilled the following criteria?</b>  | <b>Status</b>  | <b>Proof / Justification</b> |
|---|--|------------------------------|
| <p><a href="#">Inventory as of 2000:</a><br/>Average annual reduction of 1 percent of GHG emissions per tonne of merchandise handled;</p> <p>OR</p> <p><a href="#">Inventory as of 1990:</a><br/>Average annual reduction of 0.5 percent of GHG emissions per tonne of merchandise handled between 1990 and 2000, and average annual reduction of 1 percent as of 2000.</p> | <p><input type="radio"/> YES<br/><input type="radio"/> NO<br/><input type="radio"/> N.A.</p> |                              |



## 2) GREENHOUSE GASES - LEVEL 5

| Has the port or the company fulfilled the following criteria?  | Status   | Proof / Justification |
|--|--|-----------------------|
| <p><a href="#">Inventory as of 2000:</a><br/>Average annual reduction of 1.5 percent of GHG emissions per tonne of merchandise handled;</p> <p>OR</p> <p><a href="#">Inventory as of 1990:</a><br/>Average annual reduction of 0.75 percent of GHG emissions per tonne of merchandise handled between 1990 and 2000, and average annual reduction of 1.5 percent as of 2000.</p> | <p><input type="radio"/> YES<br/><input type="radio"/> NO<br/><input type="radio"/> N.A.</p> |                       |

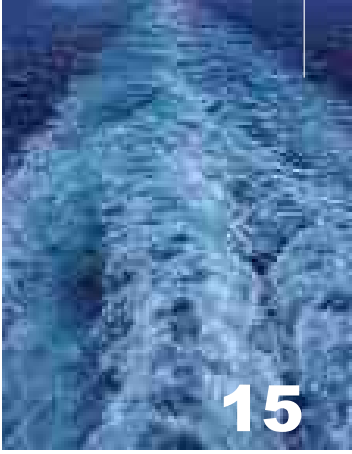
### 3) CARGO RESIDUES

#### Objective

Reduce cargo residue discharges.

### 3) CARGO RESIDUES - LEVEL 1

| Does the port or company comply with existing regulatory requirements? | Status  | Proof / Justification of compliance |
|--|---|-------------------------------------|
|  | <input type="radio"/> YES<br><input type="radio"/> NO<br><input type="radio"/> N.A. |                                     |



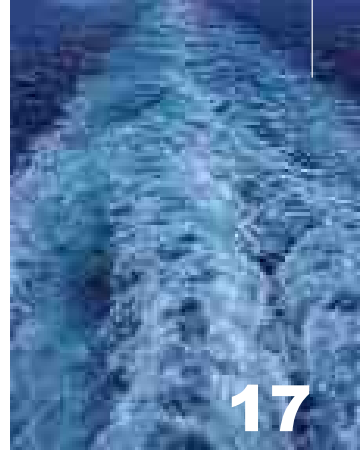
### 3) CARGO RESIDUES - LEVEL 2

| Has the port or the company fulfilled the following criteria?  | Status   | Proof / Justification |
|--|--|-----------------------|
| <p>Completion of an inventory of equipment and practices linked to the production of cargo residues.</p> <p>Note: See Annex 2-A.</p> | <p><input type="radio"/> YES</p> <p><input type="radio"/> NO</p> <p><input type="radio"/> N.A.</p> |                       |

### 3) CARGO RESIDUES - LEVEL 3

| Has the port or the company fulfilled the following criteria?  | Status   | Proof / Justification |
|--|--|-----------------------|
| <p>Adoption of a cargo residue management plan comprising the following elements:</p> <ul style="list-style-type: none"><li>■ Designated procedures for receiving and handling complaints regarding the production and treatment of cargo residues.</li><li>■ A collaborative procedure with shipowners and/or crews for reducing the amount of cargo residues left on board ships.</li><li>■ A surveillance procedure to ensure proper functioning of equipment and actions to be undertaken in case of cargo leakages or spills.</li></ul> <p>Note: See Annex 2-B.</p> | <p><input type="radio"/> YES<br/><input type="radio"/> NO<br/><input type="radio"/> N.A.</p> |                       |



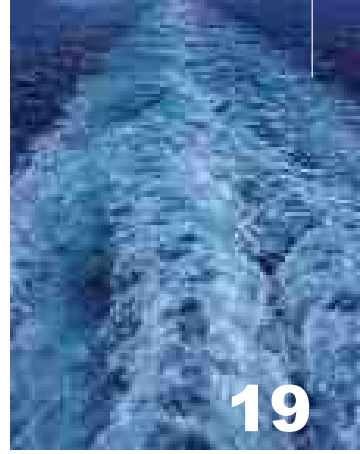


### 3) CARGO RESIDUES - LEVEL 4

| Has the port or the company fulfilled the following criteria?  | Status   | Proof / Justification |
|--|--|-----------------------|
| <p>Adapt loading and unloading operations in cases of abnormal dust emissions due to wind.</p> <p>Note: To fulfill this criterion, the port or company's management plan must indicate in writing the specific weather conditions that will require loading and unloading operations to be modified. The port or the company must also specify the nature of such modifications.</p>   | <p><input type="radio"/> YES<br/><input type="radio"/> NO<br/><input type="radio"/> N.A.</p> |                       |
| <p>Acquisition of new loading and unloading equipment that serves to significantly reduce cargo residue quantities in one or more terminals managed by the company.</p> <p>Note: To fulfill this criterion, the port or company must have acquired equipment that is recognized as being more efficient in avoiding cargo residue discharges than the equipment previously used. The installation of storm water interceptors also fulfill this criterion. If the port or company already uses high performance equipment in this respect, this criterion is considered to be fulfilled.</p> | <p><input type="radio"/> YES<br/><input type="radio"/> NO<br/><input type="radio"/> N.A.</p> |                       |

### 3) CARGO RESIDUES - LEVEL 5

| Has the port or the company fulfilled the following criteria?   | Status   | Proof / Justification |
|---|--|-----------------------|
| <p>Acquisition of new loading and unloading equipment that serves to significantly reduce cargo residue quantities in all the terminals managed by the company.</p> <p>Note: To fulfill this criterion, the port or company must have acquired equipment that is recognized as being more efficient in avoiding cargo residue discharges than the equipment previously used. The installation of storm water interceptors also fulfills this criterion. If the port or company already uses high performance equipment in this respect, this criterion is considered to be fulfilled.</p> | <p><input type="radio"/> YES</p> <p><input type="radio"/> NO</p> <p><input type="radio"/> N.A.</p> |                       |



#### 4) CONFLICTS OF USE

##### Objective

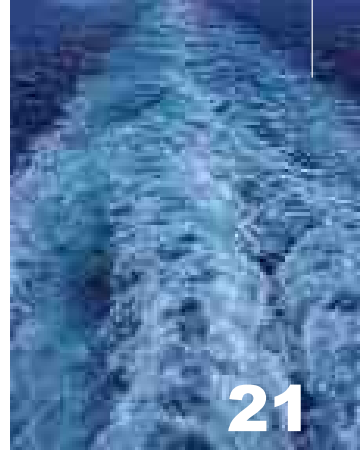
Reduce the amount of noise, dust, odour and light to which people residing close to port facilities are exposed.

#### 4) CONFLICTS OF USE - LEVEL 1

| Does the port or the company comply with existing regulatory requirements? | Status  | Proof / Justification of compliance |
|--|---|-------------------------------------|
|  | <input type="radio"/> YES<br><input type="radio"/> NO<br><input type="radio"/> N.A. |                                     |

#### 4) CONFLICTS OF USE - LEVEL 2

| Has the port or the company fulfilled the following criteria?  | Status  | Proof / Justification |
|--|---|-----------------------|
| <p><u>For ports:</u><br/>Implementation of the following best practices once irritants have been locally identified.</p> <p><u>For terminals and stevedoring companies:</u><br/>Implementation of the following best practices in one or more terminals once irritants have been locally identified.</p> <p>Note: If no irritants have been identified, none of the foregoing criteria are applicable. An irritant is presumed to exist if complaints in this respect have been filed.</p> |   |                       |
| Distribute a telephone number to persons residing close to the port in order to permit them to report instances of noise, dust, odour or excessive light ( <a href="#">ports</a> ).  | <input type="radio"/> YES<br><input type="radio"/> NO<br><input type="radio"/> N.A. |                       |
| Once a complaint has been made to the port, the port should move swiftly in dispatching a responsible individual to the site and, to the extent possible, ensuring that corrective measures are taken ( <a href="#">ports</a> ).   | <input type="radio"/> YES<br><input type="radio"/> NO<br><input type="radio"/> N.A. |                       |
| <u>Noise:</u>  |   |                       |
| Issue a warning that ships' sirens are to be used only to ensure safe movement ( <a href="#">ports</a> ).  | <input type="radio"/> YES<br><input type="radio"/> NO<br><input type="radio"/> N.A. |                       |
| Impose speed limits on vehicles in sensitive zones ( <a href="#">ports</a> ).  | <input type="radio"/> YES<br><input type="radio"/> NO<br><input type="radio"/> N.A. |                       |
| Inform employees of the importance of minimizing sound pollution ( <a href="#">ports and terminals</a> ).  | <input type="radio"/> YES<br><input type="radio"/> NO<br><input type="radio"/> N.A. |                       |
| Use quieter warning signals or equipment without compromising safety ( <a href="#">ports and terminals</a> ).  | <input type="radio"/> YES<br><input type="radio"/> NO<br><input type="radio"/> N.A. |                       |
| Use equipment to reduce the noise emanating from rail operations at the port ( <a href="#">ports and terminals</a> ).  | <input type="radio"/> YES<br><input type="radio"/> NO<br><input type="radio"/> N.A. |                       |
| Impose limits on night time operations, as needed ( <a href="#">ports and terminals</a> ).   | <input type="radio"/> YES<br><input type="radio"/> NO<br><input type="radio"/> N.A. |                       |
| <u>Dust:</u>   |   |                       |
| Adopt measures to hold back dust on roads ( <a href="#">ports</a> ).   | <input type="radio"/> YES<br><input type="radio"/> NO<br><input type="radio"/> N.A. |                       |
| Example: Watering of roads, paving, speed limits for vehicles, etc.  |   |                       |
| Apply measures to improve the management of bulk cargo storage ( <a href="#">ports and terminals</a> ).  | <input type="radio"/> YES<br><input type="radio"/> NO<br><input type="radio"/> N.A. |                       |
| Examples: Covering cargo that is stored in piles, reducing the height of such piles, moving piles to areas that are less exposed to wind, etc.   |   |                       |
| <u>Light:</u>  |   |                       |
| Direct lights so they only illuminate the necessary zone ( <a href="#">ports and terminals</a> ).  | <input type="radio"/> YES<br><input type="radio"/> NO<br><input type="radio"/> N.A. |                       |
| Switch off bothersome lighting at a specific time if there are no operations underway ( <a href="#">ports and terminals</a> ).   | <input type="radio"/> YES<br><input type="radio"/> NO<br><input type="radio"/> N.A. |                       |

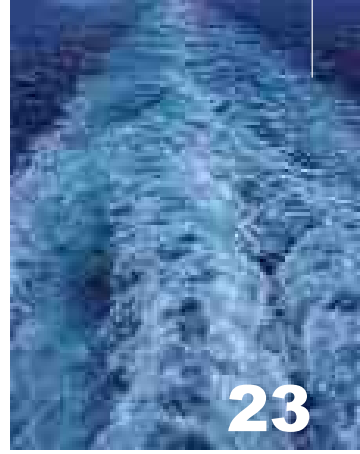


#### 4) CONFLICTS OF USE - LEVEL 3

| Has the port or the company fulfilled the following criteria?   | Status   | Proof / Justification |
|---|--|-----------------------|
| <p>Adoption of a plan for managing social impacts, which formally incorporates the best practices set out in level 2. Such a plan is to include a procedure for handling complaints (<a href="#">ports and terminals</a>).</p> <p>Note: See Annex 3.</p>  | <p><input type="radio"/> YES<br/><input type="radio"/> NO<br/><input type="radio"/> N.A.</p> |                       |
| <p>Implementation of procedures to ensure continuous surveillance of dust emissions moving in the direction of populated areas and regular measuring of sound emissions. Relevant statistics in this respect to be produced annually (<a href="#">ports</a>).</p> <p>Note: Although this does not mean continuous sampling, the port or company must carry out some sampling over the course of a year.</p> | <p><input type="radio"/> YES<br/><input type="radio"/> NO<br/><input type="radio"/> N.A.</p> |                       |
| <p><a href="#">For stevedoring companies:</a><br/>Implementation of the best practices articulated in level 2 at all terminals once irritants have been locally identified.</p>   | <p><input type="radio"/> YES<br/><input type="radio"/> NO<br/><input type="radio"/> N.A.</p> |                       |

#### 4) CONFLICTS OF USE - LEVEL 4

| Has the port or the company fulfilled the following criteria?  | Status  | Proof / Justification |
|--|---|-----------------------|
| <u>Noise:</u>  |   |                       |
| Develop a "sound map" of the port which is to be used when planning activities and future expansions ( <a href="#">ports</a> ).  | <input type="radio"/> YES<br><input type="radio"/> NO<br><input type="radio"/> N.A. |                       |
| Create screens against sound with the help of sound-reducing trees or walls ( <a href="#">ports</a> ).<br><br>Note: This criterion does not apply if it can be demonstrated that the measure will be ineffective.  | <input type="radio"/> YES<br><input type="radio"/> NO<br><input type="radio"/> N.A. |                       |
| <u>Dust (terminals only):</u>  |   |                       |
| Acquire new equipment or adapt existing equipment to minimize dust emissions at one or more terminals managed by the stevedoring company.<br><br>Note: To fulfill this criterion, the port or company must have acquired equipment that is recognized as being more efficient in minimizing dust emissions than the equipment previously used. If the port or company already uses high performance equipment in this respect, this criterion is considered to be fulfilled. This criterion can also be fulfilled by paving large areas that act as sources of dust. | <input type="radio"/> YES<br><input type="radio"/> NO<br><input type="radio"/> N.A. |                       |
| Adapt loading and unloading operations in cases of abnormal dust emissions due to wind blowing towards populated areas.<br><br>Note: To fulfill this criterion, the port or company's management plan must indicate in writing the specific weather conditions that will require loading and unloading operations to be modified. The port or the company must also specify the nature of such modifications.  | <input type="radio"/> YES<br><input type="radio"/> NO<br><input type="radio"/> N.A. |                       |
| <u>Odours:</u>   |   |                       |
| Implement a system for collecting vapours arising from tanker loading operations ( <a href="#">terminals</a> ).  | <input type="radio"/> YES<br><input type="radio"/> NO<br><input type="radio"/> N.A. |                       |



#### 4) CONFLICTS OF USE - LEVEL 5

| Has the port or the company fulfilled the following criteria?   | Status  | Proof / Justification |
|---|---|-----------------------|
| Establishment and financing of a consultative committee (led by an impartial animator) which is open to citizens ( <a href="#">ports and terminals</a> ).   | <input type="radio"/> YES<br><input type="radio"/> NO<br><input type="radio"/> N.A. |                       |
| <u>Dust (terminals only):</u><br>Acquire new equipment or adapt existing equipment to minimize dust emissions in all the terminals managed by the stevedoring company.<br><br>Note: To fulfill this criterion, the port or company must have acquired equipment that is recognized as being more efficient in minimizing dust emissions than the equipment previously used. If the port or company already uses high performance equipment in this respect, this criterion is considered to be fulfilled. Paving of large areas where dust originates from is also considered as a valid measure to fulfill this criterion. | <input type="radio"/> YES<br><input type="radio"/> NO<br><input type="radio"/> N.A. |                       |

## GREENHOUSE GASES

### Calculation of GHG Emissions (levels 3, 4 and 5)

#### Data collection and methodology

- Inventory is based on operational data from the port or company regarding factors such as the quantity of cargo handled and the quantity of fuel consumed.
- Data is compiled annually and entered into a database (Excel or other).
- In the case of port authorities, the inventory applies only to the equipment under their control. Port authorities are strongly encouraged to develop an inventory of total greenhouse gas emissions on their territory (including emissions generated by their renters and by transiting vehicles). However, given its exhaustive nature, such an inventory is not part of the required framework for the first year of self-evaluation.

#### The inventory must comprise the following elements:

- Fuel consumption by type of equipment,
- Quantity of GHG emissions by type of equipment,
- Total quantity of cargo handled,
- Total fuel consumption,
- Total quantity of GHG emissions,
- Total quantity of GHG emissions per tonne of cargo handled,
- Inventory must include results for the current year as well as for either [1990](#) or [2000](#).



It is strongly recommended that the emission co-efficients listed below (which are based on Environment Canada data) be used to calculate GHG emissions.

**Note:** Participants can use different co-efficients if they have access to a more precise methodology for calculating emissions generated by their facilities, based on load factors for specific equipment and number of operating hours.

## EMISSION FACTORS<sup>1</sup>

| Mode                            | CO <sub>2</sub> Emission Factors (g/l fuel) |
|---------------------------------|---|
| <u>Road Transport</u>           |   |
| Gasoline Vehicles               | 2289  |
| Diesel Vehicles                 | 2663  |
| Propane Vehicles                | 1510  |
| <u>Off-Road</u>                 |   |
| Off-Road Gasoline               | 2289  |
| Off-Road Diesel                 | 2663  |
| <u>Railways</u>                 |   |
| Diesel Train                    | 2663  |
| <u>Marine</u>                   |   |
| Gasoline Boats                  | 2289  |
| Diesel Ships                    | 2663  |
| <u>Buildings<sup>2</sup></u>    |   |
| Light Fuel Oil                  | 2830  |
| Heavy Fuel Oil                  | 3080  |
| Diesel                          | 2730  |
| Kerosene                        | 2550  |
| Natural Gas (g/m <sup>3</sup> ) | 1891 (g/m <sup>3</sup> )                    |

<sup>1</sup> Canadian Inventory of GHG emissions 2008, Table A12-1

<sup>2</sup> Canadian Inventory of GHG emissions 2007, Table A12-2

## Annex 1-A (Continued)

The total quantity of GHG is usually calculated in CO<sub>2</sub> equivalent units, taking into account methane (CH<sub>4</sub>) and nitrous oxide (N<sub>2</sub>O) emissions. While CO<sub>2</sub> emissions essentially depend on the type of fuel consumed, CH<sub>4</sub> and N<sub>2</sub>O emissions vary considerably depending on the type of engines used. Given the lack of a uniform methodology for calculating GHG emissions for port facilities, **the inventory required by the environmental program will, in its initial stages, cover CO<sub>2</sub> emissions only** (which account for close to 90 percent of total GHG emissions in the transportation sector). At a later phase of the program's implementation (and once a common methodology has been developed) ports and terminals will be asked to conduct more detailed inventories of their emissions. Port and terminals which already have a more precise methodology are strongly encouraged to use this methodology when completed the tables below.

It is suggested that the models in the following tables be used to calculate results.

### FUEL CONSUMPTION BY TYPE OF EQUIPMENT

| Equipment                        | Annual fuel consumption (litres) | Annual quantity of GHG emissions (tonnes) |
|----------------------------------|----------------------------------|---|
| <b><u>Terminal 1</u></b>         |                                  |   |
| Light vehicles                   |                                  |   |
| Heavy vehicles                   |                                  |   |
| Off-road vehicles                |                                  |   |
| Propane vehicles                 |                                  |   |
| Conveyers, portable cranes, etc. |                                  |   |
| <b><u>Terminal 2</u></b>         |                                  |   |
| Light vehicles                   |                                  |   |
| Heavy vehicles                   |                                  |   |
| Off-road vehicles                |                                  |   |
| Propane vehicles                 |                                  |   |
| Conveyers, portable cranes, etc. |                                  |   |
| <b>TOTAL</b>                     |                                  |   |

# Annex 1-A (Continued)

## FUEL CONSUMPTION BY TYPE OF EQUIPMENT (EXAMPLE)

| Equipment                               | Annual fuel consumption (litres) | Emission factor (g/l) | Calculation                        | Annual quantity of GHG emissions (tonnes) |
|---|----------------------------------|-----------------------|------------------------------------|---|
| <b>Terminal 1</b>                       |                                  |                       |                                    |   |
| 3 light vehicles                        | 4,200 l (gas)                    | 2,289                 | $4,200 \times 2,289 = 9,613,800$   | 9.61 tonnes                               |
| 2 heavy vehicles (wheeled heavy lifter) | 15,500 l (diesel)                | 2,663                 | $15,500 \times 2,663 = 41,276,500$ | 41.28 tonnes                              |
| 3 fork lift trucks                      | 500 l (propane)                  | 1,510                 | $500 \times 1,510 = 755,000$       | 0.75 tonnes                               |
| 1 heated warehouse                      | 18,000 l (light oil)             | 2,830                 | $18,000 \times 2,830 = 50,940,000$ | 50.94 tonnes                              |
|   |                                  |                       | <b>TOTAL</b>                       | <b>102.58 tonnes</b>                      |

## CARGO TRANSPORTED AND FUEL CONSUMPTION

| Terminal     | Total quantity of cargo handled (tonnes) | Total annual fuel consumption (litres) | Total quantity of GHG emissions (tonnes) | Value of GHG emissions per tonne of cargo handled |
|--------------|--|--|--|---|
| Terminal 1   |  |  |  |   |
| Terminal 2   |  |  |  |   |
| <b>TOTAL</b> |  |  |  |   |

## RETROSPECTIVE ASSESSMENT (NECESSARY FOR ATTAINING LEVELS 4 AND 5)

|   | 1990 | 2000 | 2008 |
|---|------|------|------|
| Value of GHG emissions per tonne of cargo handled |      |      |      |

With respect to the retrospective assessment and the level 4 and 5 reduction calculations, it is not necessary to conduct an inventory for each year since 1990 or 2000. The reduction percentages can be determined by calculating the average between the two reference years. Annual inventories will be required starting in 2008.

Example: If a company produces 0.5 kg of GHG per tonne of cargo handled in 2000, and 0.45 kg of GHG per tonne of cargo handled in 2008, this signifies a 10 percent reduction over 8 years, or an compound annual reduction of 1.49 percent.

## GREENHOUSE GASES

### Energy performance plan (level 3)

The energy performance plan must comprise the following elements:

#### Best practices

- Description of the best practices the port or company has put into place to reduce greenhouse gas emissions.
- Distribution and verification procedures for ensuring the implementation of these best practices.
- Identification of persons responsible for applying these procedures.

#### Reduction plan

- A 10 year projection of GHG emissions (based on intensity) flowing from the port or company's activities.
- A quantifiable reduction target (based on intensity) for the same period.
- Identification of possible improvements.
- Designation of a person responsible for annual follow-up of the reduction plan.

Reminder: The data contained in the energy performance plan is confidential and is not transmitted to the Green Marine secretariat. The reduction targets indicated in the energy performance plan constitute non-binding internal objectives.

**CARGO RESIDUES**

## Inventory of equipment and practices linked to the production of cargo residues (level 2)

The inventory must comprise the following elements:

- A list of bulk cargo regularly handled by the port and terminal.
- A description of the equipment used for handling and loading / unloading these cargoes.
- A list of available cargo residue reception facilities or services.
- A description of existing procedures designed to minimize the quantities of cargo residues that end up on the bridges of ships (dust) and on docks.
- A summary of the legislation and regulations that apply to cargo residues and dust emissions.

## CARGO RESIDUES

### Cargo residue management plan (level 3)

The cargo residues management plan must comprise the following elements:

#### Monitoring and complaint procedures

- Description of monitoring procedures for ensuring proper functioning of equipment and of planned responses in case of failure.
- Planned procedures for recording and handling complaints regarding the production or treatment of cargo residues.
- Identification of persons responsible for implementing these procedures.

#### Reduction plan at the source

- If applicable, a description of the best practices that the port or company has implemented to minimize cargo residues.
- Figures estimating the quantity of cargo residues that end up on the bridges of ships (if possible) and on docks.
- Identification of possible improvements with respect to handling / loading / unloading practices and equipment.
- Description of steps to be taken to sensitize shipowners or crews to the problem of cargo residues, and to introduce the possibility of adapting existing unloading practices with a view to reducing the amount of cargo residues remaining on board at the end of such operations.
- Identification of persons responsible for implementing these steps.

## CONFLICTS OF USE

### Plan for managing conflicts of use (level 3)

The plan for managing conflicts of use must comprise the following elements:

#### Procedures for handling complaints

- Planned procedures for receiving and handling complaints regarding irritants linked to port activities.
- Identification of persons responsible for implementing these procedures.
- Archiving of complaints and response actions taken.

#### Best practices and reduction plan at the source

- A description of the best practices implemented by the company to reduce irritants linked to port activities.
- Distribution and verification procedures for ensuring the implementation of these best practices.
- Identification of persons responsible for implementing these procedures.
- Plan for sensitizing employees to the social impacts of port activities.
- Identification of possible improvements for reducing irritants linked to port activities.
- In cases of expansion of activities, identification of potential new irritants and possible mitigation measures.