Environment Canada
Guidance Document

QUESTIONS AND ANSWERS

ON THE FEDERAL

BENZENE IN GASOLINE REGULATIONS

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NOTICE

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DISCLAIMER

This document does not in anyway supersede or modify the *Benzene in Gasoline Regulations*, or offer any legal interpretation of those regulations.

PREFACE

The objective of this document is to provide the reader with an understanding of the requirements of the *Benzene in Gasoline Regulations*. Most of the document is in the format of questions and answers. There is a short outline of the regulations provided at the beginning of the document. The questions and answers that follow are ordered by the sections in the regulations. Additional questions are welcome.

BENZENE IN GASOLINE REGULATIONS

Guidance Document

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This section defines types of gasoline which do not have to meet the compositional requirements of the regulations. For each type of gasoline, the sections that do apply are specified.

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Note: Part 1 applies to all primary suppliers and all sellers of gasoline.

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This section specifies the maximum levels of benzene in gasoline, both for gasoline supplied and gasoline sold. (A primary supplier may instead elect to meet the requirement for benzene on the basis of a yearly pool average -- refer to section 15.)

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The regulations came into force when they were registered (i.e., November 6, 1997), however all relevant sections in the regulations specify dates upon which they become effective.

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Schedule 1: MODEL FOR CALCULATING BENZENE EMISSIONS NUMBERS

This schedule provides the equations, adjustments and constraints that are used in calculating the benzene emissions number. These are based on the Phase 2 equations of the Complex Model for benzene exhaust and non-exhaust emissions from vehicles, as used in the northern half of the U.S.

Schedule 2: REGISTRATION FORM

This schedule provides a description of the information that a primary supplier must provide to register with Environment Canada.

Schedule 3: REPORT ON COMPOSITION OF GASOLINE

This schedule provides a description of the information that a primary supplier must provide in reporting its gasoline composition to Environment Canada.

Questions and Answers on the federal *Benzene in Gasoline Regulations*

GENERAL QUESTIONS

G.1 Why is benzene in gasoline being regulated?

Benzene is a known human carcinogen. It is a non-threshold toxicant -- a substance for which there is considered to be some probability of harm at any level of exposure.

In January 1994, the joint Environment Canada-Health Canada Priority Substance Assessment determined that benzene is in the environment in a concentration that constitutes or may constitute a danger in Canada to human life or health. Consequently, benzene was determined to be "toxic" as defined by the *Canadian Environmental Protection Act*.

Benzene occurs naturally in crude oil and so is found in gasoline. Unlike lead, for example, benzene is generally not added to gasoline. In 1995, approximately 56% of the Canadian emissions of benzene were from the combustion of gasoline in the engines of vehicles. In urban areas, this source was responsible for over 80% of the emissions of benzene. Emissions of benzene from vehicles are from benzene in the gasoline that survives combustion and from aromatics that are converted to benzene during the combustion process.

Benzene in gasoline is currently regulated in many areas of the United States and will soon be regulated throughout Europe. In July 1995, the federal Minister of the Environment announced regulations on benzene in gasoline. In October 1995, the Canadian Council of Ministers of the Environment endorsed the regulation of benzene in gasoline and tailpipe emission performance of benzene.

G.2 Why are the regulations so complicated?

The complications arise largely from allowing the use of annual pool averages (which is a compliance option) and the use of an emissions modelling approach (instead of, say, a limit on aromatics). These features were incorporated in the regulations at the behest of the petroleum industry in order to provide flexibility in how environmental performance is achieved. Any person who does not opt to use

an annual pool average is not subject to Part 2 of the regulations.

The use of annual averages requires additional enforcement provisions, such as compliance plans, independent audits, additional records, sample retention, and never-to-be-exceeded caps.

As well, the use of annual pool averages necessitates that the primary points of compliance be the refinery gate, point of importation and the blending facility. This focus on upstream compliance points requires defining what qualifies as a "pool" for averaging purposes. This is further complicated by the need to address downstream blending issues.

The use of an emissions modelling approach further complicates the regulations in that it necessitates that a number of gasoline properties be measured, and that the equations for benzene emissions from the U.S. Complex Model be provided in the regulations.

G.3 To whom do the regulations apply?

No person may sell or offer for sale gasoline with a benzene content of greater than 1.5% by volume.

The persons most affected by the regulations are those who manufacture (i.e., produce or refine), blend, or import gasoline:

- A manufacturer (producer or refiner) is any person who owns, leases, operates, controls, supervises or manages a refinery.

- A blender is any person who owns, leases, operates, controls, supervises or manages a blending facility (including mobile blending facilities -- cargo tankers, etc.) or owns the gasoline in a blending facility. Certain blending operations are excluded from the regulations (see below).

- An importer is any person who imports gasoline into Canada, and is usually thought of as the importer of record. Gasoline in the fuel tank of a vehicle for use of that vehicle is not considered by the regulations to be imported.

The term "primary supplier" has been adopted to cover any person who manufactures, blends or imports gasoline.

G.4 What types of blending operations are not covered by the regulations?

Any person only mixing together complying gasolines is not considered, for the purposes of the regulations, to be "blending" gasoline. Therefore, this type of blending operation is not subject to the regulations.

Any person only adding additives to complying gasoline is not considered, for the purposes of the regulations to be "blending" gasoline. Additives are substances that "improve" the characteristics of the gasoline, but do not materially affect its composition. Therefore, this type of blending operation is not subject to the regulations.

Any person only blending a commercially pure oxygenate or commercially pure butane with complying gasoline is not considered, for the purposes of the regulations, to be "blending" gasoline. Therefore, this type of blending operation is not subject to the regulations.

G.5 If I only buy gasoline, but do not refine, blend or import myself, what requirements must I meet?

If you only buy complying gasoline from others (e.g., a wholesaler), then you are not a primary supplier, and therefore you do not have to meet any of the requirements placed upon a primary supplier.

You would, however, be subject to the following requirements:

- you cannot sell gasoline with a benzene level in excess of 1.5% by volume (subsection 3(2)); and
- upon request by Environment Canada, you must provide Environment Canada with gasoline samples and information on the names and addresses of the persons that sold or provided the gasoline to you and the data of the transfer (section 11).

If you buy gasoline-like blendstock, there are requirements that you must fulfill (refer to questions on section 13).

G.6 What parameters of gasoline are controlled?

Two parameters of gasoline are controlled by the regulations: (1) the benzene concentration in gasoline, and (2) the benzene emissions number of gasoline. The

benzene emissions number, or BEN, is a calculated parameter that relates gasoline quality to the emissions of benzene from a typical automobile.

The BEN is computed by determining seven characteristics of gasoline (called "model parameters" in the regulations) and using a formula, or model, to calculate the benzene emissions number. The model parameters are the concentration of oxygen, sulphur, benzene and aromatics, the type of oxygenate, the vapour pressure, and two distillation fractions. The formula, or model, is based on the Phase 2 equations for exhaust and non-exhaust emissions of benzene from the U.S. Environmental Protection Agency's Complex Model for use in the northern half of the U.S. (i.e., Area C).

G.7 What options do I have in meeting the requirements?

All primary suppliers, regardless of size or nature of operations, have the options of electing to meet a per-litre limit or a yearly pool average limit for each of their facilities and import pools. The options may be elected separately for benzene and the BEN. Yearly pool averages provide more flexibility to the primary supplier, but have considerably more administrative requirements (discussed in Part 2 of this document). Elections must be made or changed by May 2 for the year 1999 or by November 2 for any subsequent year. An election cannot be changed part way through a year (refer to the first item in Part 2 for further details).

Primary suppliers who elect to meet yearly pool average limits for the BEN have the additional option of applying to use their own historical (1994, 1995 or 1996) BEN level as their limit.

G.8 How do these regulations relate to the federal Gasoline Regulations*?*

The federal *Gasoline Regulations* control lead and phosphorous in gasoline. Those regulations are separate from the *Benzene in Gasoline Regulations*, which control benzene in gasoline and the benzene emissions number of gasoline. Both regulations must be complied with.

G.9 How do these regulations relate to the federal Fuels Information Regulations*?*

The federal *Fuels Information Regulations, No. 1* require that refiners and importers report annually the levels of sulphur in all liquid fuels, including gasoline, during each quarter of the year. They also require one-time notification of any changes in the use of additives in liquid fuels. Those regulations are separate from the *Benzene in Gasoline Regulations*. Both regulations must be complied with.

G.10 How do these regulations relate to provincial regulations on gasoline?

At present British Columbia, under its *Cleaner Gasoline Regulation*, is the only province to control benzene in gasoline. B.C.'s regulation controls other characteristics of gasoline as well as benzene. The federal and B.C. regulations have the same average for benzene; the federal regulations have a never-to-be-exceeded cap whereas B.C.'s regulation does not. Within B.C., both provincial and federal regulations must be complied with.

G.11 What are the important dates in the regulations?

Primary suppliers must meet the requirements for benzene and the BEN by July 1, 1999. Sellers of gasoline have until October 1, 1999 to meet the never-to-be-exceeded cap for benzene (there are no downstream requirements for the BEN). The three-month difference is to allow gasoline produced or imported just prior to January 1, 1999 to move through the gasoline distribution system. (Note that sellers of gasoline in remote northern areas of Canada have until July 1, 2000 to comply with the cap for benzene.)

There are other dates in the regulations, mostly for administrative purposes. A list of all important dates in the regulations is presented below:

IMPORTANT DATES IN THE *BENZENE IN GASOLINE REGULATIONS*

November 1, 1998	Existing refiners, importers and blenders must be registered with Environment Canada (or 15 days prior to commencing operations for new refiners, importers or blenders).
November 2, 1998	Application for alternative sampling or analysis methods (or 60 days prior to use).
December 1, 1998	Submission of data supporting an application for an alternative limit for the BEN for those intending to use an alternative limit.
January 1, 1999	Requirements for reporting composition come into force.
February 1, 1999	Submission of compliance plans (or by August 4 of any subsequent year for a new election) for companies intending to elect for yearly pool average limits.
May 2, 1999	Election for yearly pool average limits (by November 2 of any subsequent year for a change of status).
May 15, 1999	First quarterly report on gasoline composition is due. Subsequent reports are due February 14, May 15, August 14 and November 14 of each year until February 14, 2003 (thereafter annually by February 15).
July 1, 1999	**(1) Requirements for benzene and the BEN come into force for refiners, importers and blenders.** **(2) General reporting, sampling, analysis, record keeping and auditing requirements come into force.**
October 1, 1999	**The never-to-be-exceeded cap for benzene of 1.5% by volume comes into force for anyone selling of gasoline (July 1, 2000 in remote northern areas).**
May 31, 2000	First report by the auditor is due for those on a yearly pool average (thereafter annually by May 31).
January 1, 2002	A statistical quality assurance program can be used under certain circumstances, if an application is made at least 60 days prior to its use.
February 14, 2003	Last quarterly report on gasoline composition.
February 15, 2004	First annual report on gasoline composition (subsequent annual reports are due by February 15 of each year).

QUESTIONS ON SECTIONS OF THE REGULATIONS

Section 1: INTERPRETATION

1.1 What is a "batch" of gasoline?

A batch is a quantity of gasoline that is distinct and can be characterized by one set of the properties which are used to compute the benzene emissions number. A batch will depend on the circumstances of its dispatch from a facility or import into Canada. For example, under some circumstances, each compartment of a cargo tanker might be a separate batch; in other circumstances, the entire cargo tanker might be a batch (the latter circumstances might include where all compartments of the cargo tanker were filled from one storage tank at one time). Similarly, a pipeline shipment, part of a pipeline shipment, one hold of a ship, or the entire ship might each be batches depending on the circumstances.

1.2 Why does the definition of "gasoline" have two parts?

The first part of the definition means that any fuel generally known, sold or represented as gasoline is treated as gasoline for the purposes on the regulations. This part of the definition will usually suffice to distinguish whether or not a fuel is gasoline. The second part of the definition has measurable physical properties, and can be used to distinguish gasoline from other fuels in order to cover circumstances where the fuel is not readily identifiable as "gasoline".

Note that a fuel is considered to be gasoline under the regulations if it meets <u>either</u> of the parts of the definition; the fuel is not required to meet both parts.

1.3 Why does the definition of "gasoline" include sub-octane gasoline (i.e., a "road" octane of less than 86)?

The second part of the definition of gasoline includes a specification for the anti-knock index (the average of Research and Motor octane number and often referred to as road octane). The lowest anti-knock index allowed in Canada under the Canadian General Standards Board for unleaded automotive gasoline is 86. At the behest of industry, the definition of "gasoline" includes a limit at 80. This is to allow refiners, importers and blenders the flexibility to produce or import unfinished gasoline destined for subsequent blending at a downstream facility as "gasoline-like blendstock" (see below).

1.4 What is "gasoline-like blendstock"?

"Gasoline-like blendstock" is a fuel meeting either parts of the definition for gasoline which has been identified as gasoline-like blendstock by the primary supplier under section 9. The concept of gasoline-like blendstock provides flexibility to dispatch or to import unfinished gasoline intended to be subsequently blended at a downstream blending facility. The requirements for gasoline-like blendstock are set out in section 13 of the regulations.

1.5 What is "complying gasoline"?

"Complying gasoline" is gasoline that meets the compositional requirements of the regulations and is identified as complying gasoline by the primary supplier under section 9 of the regulations.

1.6 What are "commercially pure oxygenate" and "commercially pure butane"?

Commercially pure oxygenates and commercially pure butane are oxygenates and butane that do not exceed the contaminate levels specified by the regulations. The contaminate levels for butane are the same as those in the U.S. Reformulated Gasoline Program; the contaminate levels for oxygenates were proposed by the Canadian Petroleum Products Institute. These maximum contaminate levels are:

	Commercially pure butane	Commercially pure oxygenate
Benzene (% by volume)	0.03	0.25
Aromatics (% by volume)	2.0	2.5
Sulphur (% by weight)	0.014	0.017

1.7 What do I need to do if I blend gasoline with an oxygenate or butane that does not meet the applicable contaminate levels?

Any person who blends an oxygenate or butane that does not meet the applicable contaminate levels with complying gasoline or any other type of gasoline is considered a primary supplier. Therefore, this person must comply with the requirements placed upon a primary supplier by the regulations.

1.8 What are "model parameters"?

Model parameters are the properties of gasoline that are required to compute the benzene emissions number. These are:

- the concentration of oxygen, in percent of the gasoline by weight,
- the concentration of sulphur, in percent of the gasoline by weight,
- the vapour pressure, in kPa, of the gasoline at 37.8◦C or 100◦F (often referred to as Reid vapour pressure or RVP),
- the evaporative fraction of the gasoline at 93.3◦C or 200◦F (often referred to as E200), in percent by volume,
- the evaporative fraction of the gasoline at 148.9◦C or 300◦F (often referred to as E300), in percent by volume,
- the concentration of aromatics, in percent of the gasoline by volume, and
- the concentration of benzene, in percent of the gasoline by volume.

1.9 Why does "scientific research" exclude marketing research?

Scientific research is intended to mean research that furthers scientific understanding. It includes research into the physical and chemical characteristics of gasoline and their effects on vehicles, the health of people, the environment, etc. It does not include any research undertaken by or for the seller of the gasoline into the preferences of the consumer or any other type of market research.

1.10 What is the difference between "supply" and "dispatch"?

"Supply" is defined in the regulations as meaning the act of manufacturing, blending or importing gasoline for use or sale in Canada. The term "dispatch" is not defined in the regulations, but is used in the regulations as it is commonly defined. In the regulations, "dispatch" means the act of sending a batch out from a refinery or blending facility. This includes batches that are for export (hence not for sale or use in Canada) and batches that are intended to be blended at a facility downstream of a refinery.

1.11 What is a "northern supply area"?

The regulations use the term "northern supply area" to denote remote northern locations of Canada. Northern supply area is those locations described in the

Canadian General Standards Board's standard for unleaded automotive gasoline as areas VII and VIII and that portion of area V north of latitude 49°N. This includes, the Northwest Territories, most of Yukon, northeast Manitoba, northern Quebec, Labrador and northern Newfoundland. Generally, it is difficult to supply these locations, especially in the winter. Refuelling facilities in these areas are generally slow to turnover their gasoline stock. For these reasons, the regulations include a late implementation date with respect to the per-litre cap on benzene of 1.5% by volume on sales of gasoline in these areas.

1.12 Why is "year" defined differently for the year 1999?

Since the compositional requirements do not come into force until July 1, 1999, the yearly pool average for 1999 is computed using only gasoline supplied during the last half of the year. Therefore the definition of "year" has been written so that the last half of 1999 is treated as a year.

Section 2: APPLICATION -- TYPES AND USES OF GASOLINE

2.1 What types of gasolines are not required to meet <u>any</u> of the compositional requirements of the regulations?

The following types of gasoline are not required to meet any of the compositional requirements of the regulations (there are records that must be retained):

<u>Aviation gasoline</u>: Aviation gasoline is a high-octane fuel, specially formulated for use in small aircraft. It is not for use in ground vehicles.

<u>Racing gasoline</u>: Gasoline used in competition vehicles is often specially formulated for racing purposes. Racing gasoline has a anti-knock index (road octane) of at least 100. Generally it has very low levels of benzene. Since it is a special fuel used in small volumes and since this fuel generally has very low levels of benzene, it is exempted from the compositional requirements.

<u>Scientific research</u>: Gasoline used in scientific research may have unusual properties depending on the nature of the research. In order to allow continued research into the impacts that gasoline has on the health of Canadians, the state of the environment and the operation of vehicles, this type of gasoline has been exempt from the compositional requirements.

<u>Exported gasoline</u>: The regulations do not specify any compositional requirements

for gasoline that is exported.

Gasoline in transit: Gasoline in transit is a subset of exported gasoline. It is any gasoline that passes through Canada from one location outside Canada to another location outside Canada. Some examples of such gasoline are gasoline transported by truck from Washington state through British Columbia to Alaska, or gasoline transported by ship from Europe to terminals in Nova Scotia for subsequent transportation by truck to Maine.

Gasoline-like blendstock: The exemption from the compositional requirements for gasoline-like blendstock is a "temporary" exemption. This type of gasoline is intended to be blended into compliance at a location downstream of the refinery or point of importation. It must meet the compositional requirements before it is sold to the final consumer, or it must be exported or made into aviation gasoline, racing gasoline or used in scientific research. Such a temporary exemption is necessary since a number of primary suppliers ship unfinished gasoline to blending terminals to be "finished". This unfinished gasoline may not meet the compositional requirements of the regulations, and therefore would be out of compliance with the regulations if the regulations did not provide for gasoline-like blendstock.

2.2 Why are U.S. reformulated gasoline and California Phase 2 gasoline exempted from meeting most of the compositional requirements of the regulations?

Both these reformulated gasolines have benzene levels that are equal or lower than those in the regulation. However, because of different (generally more stringent) requirements for emissions of total toxics, these gasoline may not (in theory) meet the requirements for the BEN. Further, given the averaging provisions of the U.S. and California programs for benzene, any one batch may be above or below the Canadian requirements. Therefore, an importer who has selected to be on a per-litre limit for benzene would not be able to import just any batch of these reformulated gasolines -- the importer would have to be selective.

Given the other compositional requirements for these gasolines, they are considered to be environmentally superior to average Canadian gasoline, even after the reduction in benzene. To avoid undue burden on importers, these reformulated gasoline are not required to meet the benzene limit of 1% by volume or the requirements for the BEN.

The compositional requirement for benzene downstream of the refinery, blending facility or import point (i.e., 1.5% by volume) does apply to these "reformulated" gasolines, since both U.S. and California reformulated gasolines must be below

this limit anyway. By including this downstream requirement for the reformulated gasolines, the reformulated gasolines can be co-mingled with complying gasoline without complicating downstream enforcement of the limit for benzene.

2.3 What is "northern winter complying gasoline"?

Some primary suppliers make gasoline for use in the Arctic during winter. This gasoline has characteristics that are required for use in very cold climates. The gasoline must be made and transported to the Arctic during the summer. As the equations for the BEN are different for summer and winter, the regulations provide the primary supplier with the option of identifying a batch of such gasoline as "northern winter complying gasoline". This means that, for this batch, the winter equations for the BEN can be used and winter limits for the BEN apply.

PART 1 -- REQUIREMENTS PERTAINING TO BENZENE IN GASOLINE

Section 3: BENZENE -- PROHIBITION

3.1 Why are there two prohibitions for benzene?

The first prohibition applies to the supply (i.e., producing, blending, and importation) of gasoline. A primary supplier has the option under section 15 of either meeting the per-litre limit for benzene of 1% by volume (as specified in section 3) or the limit of 0.95% by volume on its yearly pool with a never-to-be-exceeded cap of 1.5% by volume (as specified in section 16).

The second prohibition applies to the sale of gasoline at any point in the gasoline distribution system. This per-litre limit of 1.5% by volume is an upper cap that no gasoline for use in an automobile can exceed.

3.2 Why are there two different effective dates?

The prohibition on sales comes into effect three months after the prohibition on supply (i.e., producing, blending and importation) of gasoline. This is to allow gasoline supplied prior to July 1, 1999 to work its way through the gasoline distribution system and be sold to the final consumer. High-volume service stations (generally in urban areas) will be selling low-benzene gasoline within two weeks of the compliance date; whereas low-volume service stations (generally in rural

areas) may take 2 to 3 months to sell the last of their "pre-regulation" gasoline. Remote northern sites, which tend to be infrequently supplied and are generally slow to turnover stock, are allowed one year to meet the composition requirement for benzene.

Section 4: BENZENE EMISSIONS NUMBER -- PROHIBITION

4.1 Why are the limits different for gasoline supplied during the summer and winter?

The seasonal difference is due to the equations for calculating the BEN being based on those of the U.S. Complex Model, in which the equations for each pollutant are developed for summer and winter operating conditions and were therefore divided into summer and winter equations.

4.2 Why is there no prohibition on sales for the benzene emissions number?

Controls on the BEN were not extended downstream of the refinery, blending facility or point of importation, because of the non-linear behaviour of the equations for BEN.

Downstream controls on the BEN would be a problem when batches are co-mingled in the gasoline distribution system. It is possible that two batches that meet the BEN requirements might not meet the same requirements when they are mixed together. The seasonality of the BEN would also complicate downstream compliance. Therefore, the limits on BEN do not apply downstream of the refinery, blending facility or point of importation.

Section 5: REFERENCE METHODS FOR SAMPLING AND ANALYSIS

5.1 Why are reference methods required?

Reference methods are required to provide certainty and consistency in the enforcement of the compositional requirements.

5.2 What happens if a reference method is amended?

Any amendment to a reference method by the standards writing organization (e.g., the Canadian General Standards Board or the American Society of Testing and

Measurements) is automatically incorporated into the regulations (refer to subsection 1(2)), and the amended method will thereafter be used in determining compliance with the regulations and for assessing the "equivalency" of alternative methods.

5.3 Why are there two reference methods for sulphur?

The existing method (ASTM D-2622) is expensive and not generally available in Canada. However, the method that is intended to replace it has not yet been finalized by the Canadian General Standards Board (CGSB). It is anticipated that it will be published by the CGSB in 1998.

If Environment Canada is satisfied that a method gives equivalent results to the ASTM method, the new method will become an additional reference method. The equivalency must be demonstrated using the ASTM D-4855 method for comparing test methods.

5.4 Why does the method for vapour pressure specify Dry Vapour Pressure Equivalent?

The reference method (ASTM D-5191) can be used to measure total vapour pressure and compute Dry Vapour Pressure Equivalent. The latter is consistent with the CGSB standard for gasoline and is the one to determine for the purposes of the regulations.

Section 6: EQUIVALENT METHODS FOR SAMPLING AND ANALYSIS

6.1 Under what circumstances will it not be possible to use the sampling method described in the CGSB's standard for unleaded automotive gasoline?

There may be circumstances in which a sample of gasoline cannot be taken using the method described in the CGSB's standard. This may be because of special safety reasons or because of a conflict with provincial regulations. Further, the CGSB method is not appropriate for in-line blending operations, which have their own in-line analyzers.

6.2 Why is it necessary to allow equivalent methods for analyzing samples?

Reference methods may be more expensive or take longer to complete. To reduce administrative costs associated with the regulations, other less expensive or more efficient methods are allowed for record keeping and reporting requirements. This also allows for advancement in measuring technology and techniques, without having to continually revise the regulations.

6.3 How do I apply for an equivalent method?

For an alternative sampling method: At least sixty days before the method is to be used, you must send to Environment Canada, by registered mail or courier, (i) an explanation of why the CGSB method cannot be used, (ii) a description of the proposed method, and (iii) evidence that demonstrates that the reliability and accuracy of the proposed sampling method is comparable to the CGSB method.

For an alternative analysis method: At least sixty days before the method is to be used, you must send to Environment Canada, by registered mail or courier, (i) a description of the proposed equivalent method, and (ii) evidence demonstrating that the proposed analysis method is "equivalent" to the applicable reference method.

6.4 How do I demonstrate that analysis methods are equivalent?

Only methods that have been demonstrated to provide "equivalent" results to that of the reference methods can be used. Equivalency is demonstrated by the use of one of two comparative methods published by the American Society of Testing and Measurements (ASTM D-4855 or D-3764). Data demonstrating this equivalency must be provided to Environment Canada as part of the primary supplier's application.

6.5 If an analysis method has been demonstrated to be equivalent by another primary supplier, can I use the same analysis method without having to demonstrate equivalency?

It is Environment Canada's intention to publish a list of the equivalent analysis methods. Once an analysis method has been demonstrated equivalent by a primary supplier, other primary suppliers may choose to use this method by advising Environment Canada and noting that the method has been accepted as equivalent by Environment Canada.

6.6 Under what circumstances will Environment Canada disallow an alternative method?

Environment Canada may reject an alternative method at any time if Environment Canada determines that the alternative method does not provide equivalent results to the applicable reference method. Environment Canada will notify primary suppliers if a method is disallowed.

Section 7: REGISTRATION

(Also refer to Schedule 2)

7.1 Why is registration required?

The purpose of registering with Environment Canada is to aid in the administration of the regulations. It also allows Environment Canada to identify primary suppliers and provides basic information needed to monitor primary suppliers.

7.2 Do I have to register?

If you refine gasoline within Canada or import gasoline into Canada, you must register with Environment Canada. If you blend gasoline in Canada, you must register unless your blending is restricted to only (i) mixing two or more complying gasolines, (ii) adding additives to complying gasoline, which do not materially affect the composition of gasoline, and (iii) blending a commercially pure oxygenate or commercially pure butane with complying gasoline.

You must register regardless of the type of gasoline (including aviation gasoline, racing gasoline, U.S. or California reformulated gasoline, gasoline-like blendstock and gasoline for use in scientific research) you deal with, even if that is the only type of gasoline you produce or import.

If you only export gasoline (e.g., a wholesaler who purchases gasoline from a Canadian refiner), you do not have to register.

7.3 How and when do I register with Environment Canada?

If you are a primary supplier, you must register with Environment Canada by submitting a completed Registration Form (refer to Schedule 2) to the applicable

regional office of Environment Canada. The addresses of these offices are provided in Appendix A. You must register all the facilities that you operate (including mobile blending facilities) and all usual points of importation.

Registration forms must be submitted by November 1, 1998, for those primary suppliers currently supplying gasoline, or 15 days before a new primary supplier commences to supply gasoline. Any time there is a change to the information that was submitted (other than your typical annual volume), you must send an updated registration form to Environment Canada within 5 days of the change.

If you are not a primary supplier, you do not register with Environment Canada.

7.4 How are cargo tankers and other mobile blending facilities registered?

Mobile blending facilities are cargo tankers, railway cars, boats, barges, ships, etc. in which gasoline or gasoline components are blended. For the registration of mobile blending facilities, only the type, number and province of operation are required on the Registration Form. As noted above, blending does not include certain activities, most notably the blending of oxygenates (including ethanol) with complying gasoline, provided that the oxygenate meets the criteria for a commercially pure oxygenate.

7.5 What is the purpose of the registration number and how do I get one?

Environment Canada will use the registration number in the administration of the regulations. After you have submitted your Registration Form, Environment Canada will assign one or more registration numbers to you, based on the information that you provided when you registered, and notify you accordingly.

Section 8: REPORT

(Also refer to Schedule 3)

8.1 What information on gasoline do I have to report to Environment Canada?

You are required to provide the information specified in the Report on Composition of Gasoline (refer to Schedule 3). This includes identifying information (such as name, registration number, elected options, etc.) and information on the composition of gasoline supplied during the reporting period. Information on gasoline composition includes maximum and average values for the levels of

benzene, aromatics, olefins, sulphur and oxygen, and the distillation fractions E200 and E300, the vapour pressure (RVP), and the benzene emissions number.

8.2 Where and when do I submit the reports to Environment Canada?

Reports are submitted to the applicable regional office of Environment Canada (addresses are listed in Appendix A). For the years 1999, 2000, 2001 and 2002, this report is required quarterly within 45 days of the last day of the quarter (i.e., on or before February 14, May 15, August 14 and November 14). For the year 2003 and every year thereafter, this report is required annually on or before February 15.

8.3 For the purposes of the report, how do I sample and analyze the gasoline?

If you have elected to meet a yearly pool average, you must follow the procedures specified in section 19 of the regulations. The regulations define reference test methods that will be used for assessing compliance and provides for use of alternative test methods by companies for reporting and record keeping purposes, provided that the methods have been demonstrated to be equivalent.

If you have not elected for a yearly pool average, you are therefore required to meet per-litre limits. You are not specifically required to sample and analyze all gasoline. Nevertheless, you must report maximum and average composition of your gasoline.

8.4 Why are olefins required to be reported?

Olefins are the primary precursor to emissions of 1,3-butadiene from vehicles. 1,3-Butadiene is generally considered to have a higher cancer potency than benzene. It is currently being assessed jointly by Environment Canada and Health Canada under the second Priority Substances Assessment.

Information collected under these regulations will aid in determining control options for 1,3-butadiene if that substance is determined to be "toxic" under the *Canadian Environmental Protection Act*. There is currently a voluntary program for refiners and importers to report levels of olefins in their gasoline (as well as levels of benzene and aromatics) to Environment Canada.

8.5 What records are suitable for imports of U.S. reformulated gasolines?

Records of composition required by the U.S. or California regulations are acceptable for providing the information required in the Report on Composition of Gasoline. These records are described in the U.S. regulations on gasoline composition in section 80.74 (for reformulated gasoline) and section 80.104 (for conventional gasoline) and in section 2270 of the California regulation for California Phase 2 gasoline.

8.6 What additional information is required in an annex to the report?

There are two instances where additional information is required to be provided in an annex to the report. These instances are when, during the reporting period, you (i) dispatch or import gasoline-like blendstock, or (ii) supply gasoline for which the composition was outside the specified range for the BEN equations (refer to questions on Schedule 1). The information is submitted as an annex to the report, rather than upon each instance of occurrence, in order to ease the administrative burden on primary suppliers. The specific requirements are set out in subsection 13(2) of the regulations and subsection 2(2) of Schedule 1 of the regulations.

8.7 Why do I have to report my gasoline composition prior to the implementation of the compositional requirements (i.e., between January and June 1999)?

Environment Canada will use this data to assess, in part, the effect of the regulations. Also, this reporting will provide timely data for Environment Canada's ongoing process to evaluate additional reformulation of gasoline for environmental purposes.

Section 9: RECORDS

9.1 Why must I keep track of ten different types of gasoline?

For the purposes of the regulations, ten types of gasoline are defined (as described in subsection 9(3)). These are:

1 - complying gasoline,
2 - northern winter complying gasoline,
3 - gasoline that is U.S. reformulated gasoline,
4 - gasoline that is California Phase 2 gasoline
5 - gasoline-like blendstock,
6 - gasoline for export,

7 - gasoline in transit through Canada,
8 - gasoline for use in aircraft,
9 - gasoline for use in competition vehicles, and
10 - gasoline for use in scientific research.

The first two of these types (#1-2) may be sold for use in vehicles, and so must meet the compositional requirements of the regulation. The two reformulated gasolines (#3-4) may be sold for use in vehicles, and have been "deemed" to meet the compositional requirements of the regulations. Gasoline-like blendstock (#5) is gasoline that must be further blended to meet the compositional requirements of the regulations. The last five types of gasoline (#6-10) would not be used in ordinary vehicles in Canada, therefore are not required to meet the compositional requirements of the regulations (however there are record keeping requirements).

9.2 How and when do I identify the type for a batch of gasoline?

The type of gasoline must be identified in a record made by you (or a record that you obtain from your supplier) prior to the dispatch or importation of the fuel (subsection 9(2)). If no record is made, the gasoline is considered to have been identified as complying gasoline. (The latter provision was added for the convenience of primary suppliers who normally deal with complying gasoline, and asked not to be burdened with making a record for most of their batches.)

Any batch identified as complying gasoline, either in a record or by default, is required to meet the compositional requirements of the regulations. The identification of batches must occur prior to the dispatch or importation of the batch so that Environment Canada knows how to apply the regulations in the event of monitoring or enforcement action.

9.3 What records are required?

In addition to records identifying the type of gasoline, other records must be kept on:

- general information regarding each batch dispatched or imported (subsection 9(4));
- information on each batch of complying gasoline received at a refinery or blending facility (subsection 9(5));
- written evidence that establishes that the batches of gasoline for use in aircraft, competition vehicles or scientific research or batches that were exported or in transit through Canada were sold or delivered for the

appropriate use (subsection 9(6)); and

- written evidence that batches identified as U.S or California reformulated gasolines meet the applicable U.S. or California compositional requirements (subsection 9(7)).

9.4 When do the records need to be made?

Record should be made as soon as possible, so that the record is available to an enforcement officer making an inspection of your facility. A record identifying the type of gasoline must be made prior to the dispatch or importation of a batch.

9.5 Why do I have to record the type of gasoline twice?

You must have a record of the type of gasoline under subsection 9(2) and under subsection 9(4). The first record is made prior to dispatch or import of the batch to identify the type of gasoline, while the second record is general information on the batch that can be made after dispatch or importation. The two records may be physically the same.

9.6 What evidence is required to establish the type of gasoline?

Written evidence is required establishing that the gasolines which do not need to meet the compositional requirements of the regulations were sold or delivered for the appropriate use.

Section 10: RETENTION OF RECORDS

10.1 How long are records required to be kept?

Records must be kept for 3 years after they are made.

10.2 Where are the records kept?

Records may be kept at the facility, at your offices or at a central filing location. All records must be kept in Canada, and enforcement officers must have ready access to them.

Section 11: SUBMISSION OF SAMPLES AND RECORDS

11.1 What is the reason for this section?

This section provides the authority for enforcement officers to obtain records and samples as necessary to monitor and enforce the regulations.

11.2 How will the records and samples be requested by Environment Canada?

Access to records would routinely be requested by Environment Canada officials inspecting a facility. During an inspection, these officials may also request samples of the gasoline. Requests for records and samples could also arise under other circumstances.

11.3 When must I provide the records to Environment Canada?

You must provide the records to Environment Canada as per the instructions of an enforcement officer.

11.4 Why do the regulations say Environment Canada can specify the address and the manner that samples must be delivered?

Under certain circumstances, Environment Canada may wish to send samples to an independent laboratory for analysis. To avoid any possible contamination and for safety reasons, the regulations provide for the specifications of the manner which the sample is transported (such as acceptable containers, packaging, compliance with the *Transportation of Dangerous Goods Regulations*, etc.).

11.5 Why must I tell Environment Canada from whom I purchased my gasoline?

Retailers and wholesalers of gasoline generally do not have control of the composition of the gasoline that they sell. If a batch of gasoline is found at a retail or wholesale facility that does not meet the compositional requirements of the regulation, Environment Canada will want to trace the origin of the batch in question.

Section 12: ADDITIONAL REQUIREMENTS FOR IMPORTERS

12.1 Why are there additional requirements for importers?

Gasoline can be imported into Canada at any time and at any one of hundreds of import point. As there are specific compositional requirements at the point of importation which are different than those downstream of the import point, it is necessary to have a mechanism in place for Environment Canada to know when and where gasoline will be imported.

12.2 Why is there a minimum volume specified for the notification?

Given the large number of small imports it is not practical to be notified of every batch of imported gasoline. The regulation therefore requires notification when volumes of gasoline larger than 100 m^3 are imported. Note that a cargo tanker with a trailer can transport approximately 50 m^3 of gasoline at one time.)

Please note that there is no minimum volume for the notification of imports of gasoline-like blendstock. This will allow for close monitoring of imports of gasoline-like blendstock, in order to ensure that such gasoline is not represented as complying gasoline or used or sold for use in spark ignition engines.

12.3 Why must records accompany imported gasoline to the point of delivery?

Without this requirement, it would be very difficult to identify gasoline that had been imported after it has entered Canada. The record must include type and volume of the batch along with information on the importer and the receiver of the batch. This basic information is required by Environment Canada in order to carry out compliance activities for imported gasoline.

Section 13: GASOLINE-LIKE BLENDSTOCK -- RECORDS AND REQUIREMENTS

13.1 What is "gasoline-like blendstock"?

"Gasoline-like blendstock" is a fuel that meets the definition for gasoline and that has been identified as gasoline-like blendstock by the primary supplier under section 9. The concept of gasoline-like blendstock provides flexibility to dispatch or to import unfinished gasoline intended for subsequent blending at a downstream blending facility.

13.2 What are the requirements for gasoline-like blendstock?

Gasoline-like blendstock cannot be dispensed for use in a spark ignition engine or be represented as complying gasoline. It must be further refined or blended to become complying gasoline, aviation gasoline, racing fuel or gasoline for use in scientific research, or it must be exported. There are record requirements for gasoline-like blendstock, both for the primary supplier and the receiver.

13.3 Can gasoline-like blendstock be sold?

Gasoline-like blendstock may be sold as gasoline-like blendstock. There is no limitation on who the gasoline-like blendstock can be sold to, provided that the applicable records be made and retained. Gasoline-like blendstock cannot be represented as complying gasoline nor can it be use in a spark ignition engine.

13.4 What records must I keep for gasoline-like blendstock?

In addition to the general record keeping requirements for all types of gasoline, a person must, prior to dispatch or importation of a batch of gasoline-like blendstock, record the name and address of the person purchasing or receiving the batch, along with the date of transfer and the volume of the batch.

A record of this information must also be kept by anyone who purchases or receives gasoline-like blendstock and subsequently sells or transfers ownership of it.

Anyone who purchases or receives a batch of gasoline-like blendstock must record the name, address and registration number of the primary supplier who originally supplied the batch and the name and address of the seller or provider of the batch, along with the date of transfer and the volume of the batch.

PART 2 -- OPTION FOR A YEARLY POOL AVERAGE

P2.1 Does Part 2 apply to me?

Part 2 of the regulations only applies to those who have elected to comply with a requirement on the basis of a yearly pool average.

Section 14: APPLICATION

14.1 Can I choose to meet one requirement on the basis of a yearly pool average and the other on the basis of a per-litre limits?

Yes. For details, refer to Questions 14.2 to 14.4.

14.2 As a primary supplier, can I choose to meet the requirements for benzene on the basis of a yearly pool average and meet the requirements for the benzene emissions number on a per-litre basis?

Yes, refer to paragraph 14(1)(a). In this case, the compositional requirements of sections 4 and 16 must be complied with. The model parameters, other than benzene, are not explicitly required to be measured or recorded. As, well, the compliance plan and the audit need not address the BEN or any model parameter other than benzene. The compositional requirements of subsection 3(2) must always be complied with.

14.3 As a primary supplier, can I choose to meet the requirements for the benzene emissions number on the basis of a yearly pool average and meet the requirements for benzene on a per-litre basis?

Yes, refer to paragraph 14(1)(b). In this case, the compositional requirements of subsection 3(1) and section 17 must be complied with. The compliance plan and the audit would not need to specifically address benzene, other than as one of the model parameters. The compositional requirements of subsection 3(2) must always be complied with.

14.4 As a primary supplier, can I choose to meet both the requirements for benzene and the benzene emissions number on the basis of a yearly pool average?

Yes, refer to paragraph 14(1)(c). In this case, the compositional requirements of sections 16 and 17 must be complied with. The compositional requirements of subsection 3(2) must always be complied with.

14.5 If I have more than one facility, can I choose different options for each of the

facilities?

Yes, unless the facilities are combined under section 18.

For example, if you have two refineries, you can elect to meet the requirements on the basis of a yearly pool average for one refinery and on a per-litre basis for the other. (In the latter case no election is required, as the per-litre basis is the default option.) The same is true for import pools. For example, if you import into Ontario and Quebec, you can elect to meet the requirements on the basis of a yearly pool average for one provincial import pool and on a per-litre basis for the other. (Again, in the latter case no election is required, as the per-litre basis is the default option.)

14.6 If I have more than one facility on the basis of a yearly pool average, must I meet the yearly pool average requirement at each of my facilities or can I combine them?

You must meet the yearly pool average at each of your facilities, unless the facilities are combined under section 18.

Section 15: ELECTION -- YEARLY POOL AVERAGE

15.1 What is the difference between compliance options?

If you do not elect to meet the compositional requirements on the basis of a yearly pool average, then every batch of gasoline that you supply must meet the per-litre requirements of Part 1. There are fewer administrative requirements associated with this option since any batch can be readily tested for compliance.

If you elect to meet the compositional requirements on the basis of a yearly pool average, then your yearly pool average must not exceed the yearly pool limit and every batch of gasoline must also meet the never-to-be-exceeded caps. This option provides more flexibility; however there are also more administrative requirements.

15.2 How is the election made?

You must inform Environment Canada in writing at least 60 days prior to the beginning of the calendar year for which the election is being made (i.e., by May 2 for 1999 and by November 2 for any subsequent year). The election cannot be

changed part way through a calendar year.

15.3 Do I have to make an election every year?

No. You need to make an election for a yearly pool average only once.

15.4 What happens if I do not make an election?

If you do not elect for a yearly pool average, then you must meet the requirements of the regulations on the per-litre basis.

15.5 Can I change my compliance option?

Yes. If you wish to change options, you must inform Environment Canada in writing at least 60 days prior to the beginning of the calendar year for which the election is being changed (i.e., by November 2). Changes cannot be made part way through a calendar year. Once an election for the yearly pool average has been made, it is in place until Environment Canada is informed to the contrary.

Section 16: BENZENE -- PROHIBITION

16.1 What is the difference between the 0.95% limit and the 1.5% limit?

The yearly pool average for benzene must not exceed 0.95% by volume -- any one batch may be above or below this value. However, no batch may exceed the cap of 1.5% by volume.

Section 17: BENZENE EMISSIONS NUMBER -- PROHIBITION AND ALTERNATIVE LIMITS

17.1 What is the difference between the three limits that are specified?

The yearly pool average for the benzene emissions number must not exceed 59.5 -- any one batch may be above or below this value. No batch may exceed the limit of 102 if the batch is supplied during the summer or 132 if the batch is supplied during the winter.

17.2 How were these limits derived?

Please refer to Question O.2 (in the section on miscellaneous questions).

17.3 What is an alternative limit?

An alternative limit is a facility-specific limit based on a facility's (or provincial import pool's) historical gasoline quality. You can elect to use an alternative limit instead of a limit specified in subsection 17(1).

17.4 Why must the alternative limit be based on 1994, 1995 or 1996 gasoline quality?

The concept of a base year was used in the U.S. reformulated gasoline program. Whereas the U.S. used 1990 as the base year (the year in which the Clean Air Act Amendments were passed), Canadian Council of Ministers of the Environment selected the year 1994 for Canada because:

- 1994 is the year prior to the introduction of reformulated gasoline in the U.S., which may have impacted Canadian markets;

- 1994 is the first year prior to the recommendations to the CCME and therefore most appropriate as a baseline; and

- 1994 is the first year that detailed data on benzene and aromatics were available.

Some primary suppliers underwent equipment modifications in 1994 or committed to other changes. Also, some primary suppliers do not have the necessary data to establish a 1994 baseline. In order for the regulations to provide flexibility in establishing a primary supplier's baseline, the regulations allow a primary supplier to use data from any one of the following years: 1994, 1995 or 1996.

17.5 How and when do I apply for an alternative limit?

A written application for an alternative limit must include laboratory data and volumetric data, values for the alternative limits established in accordance with subsection 17(3) of the regulations, and evidence that the data has been verified

by an auditor. The application must be sent to the appropriate regional office of Environment Canada by registered mail or courier before December 1, 1998 (addresses are provided in Appendix A).

17.6 Can I elect to meet the standard limit for one of the limits and alternative limits for the others?

Yes, refer to paragraph 17(2)(b). A primary supplier electing to meet an alternative limit for the yearly pool average limit or the summer or winter never-to-be-exceeded caps need not specify alternatives for the other limits. In this case, the standard limits would apply.

17.7 What is the difference between the two methods for computing the alternative limits?

Method A, set out in paragraphs 17(3)(a), volumetrically averages the benzene emissions number of each batch to derive the annual average for the benzene emissions number.

Method B, set out in paragraphs 17(3)(b), volumetrically averages each of the model parameters of each batch to derive seasonal averages for each model parameter. The summer and winter benzene emissions numbers are computed from the seasonal averaged model parameters, and are then volumetrically averaged to derive the annual average for the benzene emissions number.

Method A requires data on all model parameters for all batches supplied during the year; Method B does not.

17.8 Who must audit my data?

The auditor must be certified by a nationally or internationally recognized accreditation organization to be able to undertake ISO 9000 product quality assessments. (Note: for the purposes of these regulations, the auditor is not required to undertake an ISO 9000 assessment.) The auditor must be independent of the primary supplier and not an employee of the primary supplier.

17.9 How is the audit carried out?

The auditor must verify that the laboratory and volumetric data represents the gasoline supplied by the primary supplier during the applicable year, and that the proposed alternative limits were correctly calculated. The person who undertakes the one-time verification of the alternative limits need not be the same person who undertakes the annual audit required by section 22.

17.10 How will Environment Canada determine if the data provided in support of an alternative limit represents my gasoline?

Environment Canada will assess alternative limits by reviewing submitted data, reviewing the auditor's assessment, and comparing it to Environment Canada's data base on gasoline composition.

17.11 Can I rescind my alternative limit if I so choose?

Yes, refer to subsection 17(5). You must notify Environment Canada in writing of your decision.

Section 18: CALCULATING A YEARLY POOL AVERAGE

18.1 What types of gasoline do I include in my yearly pool average?

Only gasoline that you have identified as complying gasoline and northern winter complying gasoline are included in your yearly pool average. You must exclude all batches of gasoline that were:

- identified as another type,
- exported by you (or your agent or affiliate) regardless of how it is identified, and
- complying gasoline obtained by you from an other person.

18.2 If I buy gasoline from someone can I include it in my yearly pool average?

Generally no, you must exclude all batches of complying gasoline from the calculation of your yearly pool average (refer to subparagraph 18(2)(b)(iii)). However, if you purchase gasoline-like blendstock, then you may include the batch in your yearly pool average provided that you blend or further refine the gasoline-like blendstock to meet the compositional requirements of the regulations.

18.3 If I only buy gasoline from refiners or importers, but do not refine, blend or import myself, what do I include in my pool?

If you only buy complying gasoline from others (e.g., a wholesaler), then you are not a primary supplier, and therefore you do not have to calculate a yearly pool average or meet any of the requirements placed upon a primary supplier.

You would, however, be subject to the following requirements:

- you cannot sell gasoline with a benzene level in excess of 1.5% by volume (subsection 3(2)); and

- upon request by Environment Canada, you must provide Environment Canada with gasoline samples and information on the names and addresses of the persons that sold or provided the gasoline to you and the date of the transfer (section 11).

If you buy gasoline-like blendstock, there are requirements that you must fulfill (refer to questions on section 13).

18.4 If I sell a batch of complying gasoline to another person who then exports the batch do I exclude the batch of gasoline from my yearly pool average?

If a batch of gasoline is exported by your agent or affiliate, the batch must be excluded from your yearly pool average.

If a batch is sold to an independent party, you are required to include it in your yearly pool average since you do not control its final destination.

18.5 What gasoline pools can I combine?

Gasoline pools can be combined, provided that the pools meet certain conditions (refer to subsections 18(3) to (6)). The following pools can be combined, provided that the conditions specified in section 18 are met:

- gasoline imported directly into a refinery or blending facility may be included in that facility's pool;

- the pool for a blending facility that blends gasoline-like blendstock into complying gasoline may be combined with the refinery or import pool from which the blending facility received gasoline-like blendstock;

- the pool for a blending facility that blends complying gasoline with commercially pure oxygenates or butane may be combined with the refinery or import pool from which the blending facility received the gasoline; and

- pools within a province or territory may be combined if you only produce or import small amounts of gasoline (i.e., less than 12,000 m^3 per year).

Note that all gasoline imported by a primary supplier into a province forms one provincial import pool for that primary supplier.

18.6 As an importer, why do I have to keep separate pools for each province that I import?

Similar to refiners and blenders which have to keep separate pools for each facility, importers must keep a separate pool for each province that they import into. This is to prevent regional disparities in benzene levels.

18.7 Can I get credit for the benefits of blending with commercially pure oxygenate or commercially pure butane?

Yes, under certain conditions (refer to subsection 18(5) of the regulations).

18.8 For the year 1999, do I include gasoline that I supplied during the period January 1 to June 30 in the calculation of my yearly pool average?

No. Only gasoline supplied between July 1 and December 31 is included in the calculation of your 1999 yearly pool average.

Section 19: PROCEDURES FOR SAMPLING AND ANALYSIS

19.1 How often must I sample if I have elected for a yearly pool average?

A sample must be taken from each batch supplied. There are only two exceptions to this (and each has certain conditions that must be met):

- For imports, if one or more cargo truck or railway cars pick up gasoline from one storage tank (and the gasoline is not modified in the storage tank between or during the pick ups), only one sample need be collected for all the cargo tanks and railway cars. This can be collected from the storage tank or one of the cargo trucks or railway cars (refer to subsection 19(2) of the regulations).

- If gasoline-like blendstock is sent from a refinery or import point to a blending facility that blends the gasoline-like blendstock with commercially pure oxygenates or butane, the sample may be taken from the gasoline-like blendstock instead of the resulting gasoline (refer to subsection 19(3) of the regulations).

19.2 How often must I sample if I have <u>not</u> elected for a yearly pool average?

You must sample enough to ensure that the information you provide in Schedule 3 is accurate. The requirements of section 19 do not apply to you. Furthermore, there is no requirement for you to retain any of the samples.

19.3 If I have elected for a yearly pool average, do I have to analyze every sample?

Generally yes, a sample must be analyzed from each batch identified as complying gasoline. However, there are exceptions:

- samples can be combined under specified circumstances into a composite sample representing a number of batches (refer to Question 19.4),
- U.S. or California records of analysis for U.S. gasoline can replace the analysis requirements, and
- starting in 2002, it is possible to use a statistical quality assurance program and only analyze some of the samples (refer to Questions 19.6 and 19.8).

19.4 Can samples be combined?

For the purposes of analyzing the composition of the gasoline, samples can be combined under specified conditions and only the composite sample need be analyzed. The conditions under which samples can be combined are specified in subsection 19(5) of the regulations. The composite sample may represent batches supplied for not more than a 30-day period or amounting to not more than 1000 m^3, whichever requires more frequent analysis.

19.5 Do I keep the composite sample or the original samples?

The original samples must be retained; the composite sample need not be retained.

19.6 What is a "statistical quality assurance program"?

A statistical quality assurance program is a combination of testing and statistical techniques used to determine whether gasoline meets a particular compositional requirement.

19.7 What is the difference between a "quality control program" and a "statistical quality assurance program"?

A quality control program demonstrates that the laboratory is accurately measuring the composition of the gasoline. A statistical quality assurance program allows you the option of not having to analyze every sample. Both terms are defined in subsection 1(1) of the regulations.

19.8 How and when can I apply for a "statistical quality assurance program"?

A statistical quality assurance program cannot be used prior to 2002. In order to use a statistical quality assurance program, you must apply to Environment Canada at least 60 days before its use and provide a report describing the program and demonstrating its reliability. Based on two years of data, the program must give equivalent or conservative results compared to analyzing every batch.

19.9 Why can't I use a statistical quality assurance program sooner?

During the period 1998 to 2001, there will be considerable changes to the world's gasoline:

- first regulatory use of the Complex Model in the U.S. occurs in 1998;
- U.S. anti-dumping requirements change in 1998;
- Phase 2 of the U.S. reformulated gasoline program commences in 2000;
- Europe's cleaner gasoline program commences in 2000; and

- British Columbia's requirements come into place between 1999 to 2001.

After these initial critical (and potentially volatile) years and after the new federal requirements have been in effect for a few years, a statistical quality assurance program will be allowed if you can demonstrate its reliability.

19.10 Does the "statistical quality assurance program" reduce the number of samples that need to be taken?

No. A statistical quality assurance program only affects the number of samples that have to be analyzed not the number of samples taken.

19.11 What circumstances affect the use of a "statistical quality assurance program"?

Since both the source of a refinery's crude oil and any installation or modification of equipment can affect the gasoline composition, a statistical quality assurance program will continue to be acceptable only as long as the program continues to give equivalent or conservative results compared to the standard requirements.

As well, a primary supplier may not use a statistical quality assurance program if the primary supplier has been convicted of an offence in respect of these regulations.

19.12 Must I keep a sample even if I do not analyze it?

Where you are required by the regulations to collect a sample, you must retain the sample. This allows Environment Canada to conduct its own tests on the sample and verify the primary supplier's records.

19.13 How long must samples be kept?

Samples must be kept either

- until the thirtieth day after the sample was analyzed, or
- until the day upon which the twentieth batch has been supplied after the sample was analyzed.

If the analysis was done on a composite sample, all samples that made up the

composite sample would have to be kept until one of the above conditions is met. Otherwise, the maximum number of samples that need be kept at one time is 20. There is no requirement for primary suppliers on a per-litre limit to retain samples.

19.14 Why must samples be kept in Canada?

Outside Canada, Environment Canada has no jurisdiction and cannot ensure access to samples and records that are necessary to assess compliance with the regulations. Therefore, samples and records must be retained in Canada.

Section 20: RECORD OF COMPOSITION

20.1 What records do I have to keep on gasoline composition if I have elected for a yearly pool average?

A record must be kept for each batch and must link the sample to the batch from which it was taken. This record must include the type of oxygenate added, if any, the measured values for each model parameter, and the resulting BEN. A running average must also be computed and recorded for the model parameters and the BEN.

For composite samples, the values obtained for the composite sample are used for the records for the original batches that made up the composite sample. For those samples not analyzed because of the use of a statistical quality assurance program, no value is recorded.

20.2 Are these records in addition to those made under section 9?

Yes, although they can be made on the same physical record.

20.3 Where and for how long are the records kept?

All records required by these regulations must be kept in Canada for three years after they are made.

20.4 Can I use records required by the U.S. federal or California state governments to provide the information on composition?

Yes. Paragraph 20(c) of the regulations refer to subsection 19(4).

Section 21: COMPLIANCE PLAN

21.1 What is a compliance plan?

A compliance plan is a document that you prepare. It gives details on how you are going to demonstrate to Environment Canada that the yearly pool average is being met.

21.2 Why is a compliance plan necessary?

Because each facility and operation are different, the regulations cannot address all eventualities in how primary suppliers will demonstrate compliance. Instead, the regulations require primary suppliers on a yearly pool average to prepare and submit a compliance plan with details on how they will demonstrate that they will meet the yearly pool average.

21.3 Do I have to submit a compliance plan?

You must submit a compliance plan only if you have elected to use a yearly pool average.

21.4 What information must I include in my compliance plan?

The compliance plan must describe how you will demonstrate that the yearly pool average will be met. It must explain how, where and when samples are to be collected, how they are to be analyzed and recorded, and the location where samples and records are to be kept. An acceptable compliance plan must clearly present details on the systems, practices and procedures you will use to demonstrate to Environment Canada that the yearly pool average is being met.

21.5 Must the compliance plan be submitted annually to Environment Canada?

No. The compliance plan is submitted prior to the election to meet a requirement on the basis of a yearly pool average. A revised compliance plan must be

submitted whenever there are changes.

21.6 Where and when do I have to send my compliance plan?

Send your compliance plan by registered mail or by courier to the appropriate regional office of Environment Canada (addresses are listed in Appendix A). You must submit it by February 1, 1999 for the year 1999 and, for subsequent years, by August 4 of the year before the first year for which you have elected to meet a requirement on the basis of a yearly pool average.

21.7 How do I inform Environment Canada of any changes to my compliance plan?

You must submit updated compliance plans at least 45 days prior to the change to the above address.

Section 22: AUDIT

22.1 Do I have to have an independent audit?

You must have an annual audit if you have elected to use a yearly pool average.

22.2 Why is an independent audit required?

The independent audit is one component of the overall compliance program for a primary supplier who has elected to use a yearly pool average. It provides independent verification that a primary supplier's systems, practices and procedures are appropriate to demonstrate compliance and that required records and reports are complete and accurate.

22.3 What qualifications must an auditor have?

The auditor must be certified by a nationally or internationally recognized accreditation organization to be able to undertake ISO 9000 product quality assessments. (Note: for the purposes of these regulations, the auditor is not required to undertake an ISO 9000 assessment.) The auditor must be independent of the primary supplier and not an employee of the primary supplier.

22.4 Where can I find a person capable of undertaking an audit?

The following organizations will be able to assist in finding a person capable of undertaking an ISO 9000 assessment: the Standards Council of Canada, the International Registrar of Certified Auditors, and the Registrar Accreditation Board. The addresses of these organizations are provided in Appendix B.

22.5 What must my auditor do?

Each year, the auditor must undertake a methodical examination and verification of your systems, practices and procedures with the purpose of determining, in the auditor's opinion, the appropriateness of them to demonstrate compliance. The auditor must also verify that the required records and reports are complete and accurate. The auditor's report must assess your compliance during the year, and report on any discrepancies and deviations.

22.6 What must be reported to Environment Canada and when?

You must submit the auditor's report to Environment Canada by May 31 following the year that the audit covered. This report must contain information on the audit procedures, a compliance assessment by the auditor and a description of any inaccuracies and deviations, as well as basic information on the primary supplier, the auditor and the volume of gasoline produced or imported.

22.7 Can one audit report cover all of my facilities?

Yes. Note that one audit report must cover all facilities combined under section 18.

22.8 Will Environment Canada pay for my audit?

No. Engaging and compensating the auditor are your responsibility.

PART 3 -- AMENDMENT TO SCHEDULE I TO THE ACT (Section 23)

P3.1 What is the significance of section 23?

When regulations made pursuant to section 34 of the *Canadian Environmental Protection Act* address a substance determined to be "toxic" under section 11 of that Act, the substance and a brief description of the regulations are added to Schedule 1 to that Act.

Section 23 adds the description of the regulations to the schedule, while a separate order (which was passed at the same time as the regulations) added benzene to the schedule.

PART 4 -- COMING INTO FORCE (Section 24)

P4.1 What requirements come into force when the regulations are registered?

All requirements of the regulations came into force on November 6, 1997, which was the date that they were registered (the regulations were published on November 26, 1997). Note, however, that all relevant sections for compositional and administrative requirements include the dates upon which they become effective.

SCHEDULES

Schedule 1: MODEL FOR CALCULATING BENZENE EMISSIONS NUMBERS

S1.1 Where did the equations come from?

The equations are from the U.S. reformulated gasoline regulations. They are based on the Phase 2 equations for exhaust and non-exhaust emissions of benzene from the U.S. Environmental Protection Agency's Complex Model for use in the northern half of the U.S. (i.e., Area C).

S1.2 Where did the acceptable range for the model parameters come from?

The BEN equations are non-linear and are based on data within the acceptable ranges. The acceptable ranges in these regulations for the model parameters are the same as those allowed by the U.S. Environmental Protection Agency for conventional gasoline. The exception is the range for benzene, for which the maximum is 1.5% by volume (i.e., the limit set under the *Benzene in Gasoline Regulations*).

S1.3 Can I go outside the acceptable range for the model parameters?

For the purposes of these regulations, you are allowed to go outside the acceptable ranges for any of the model parameters, except for benzene. You must report any excursions in an annex to the report to Environment Canada required under section 8 of the regulations.

S1.4 What is the acceptable range for vapour pressure during the winter?

The regulations do not specify an acceptable range for vapour pressure during the winter (September 16 to April 14), since winter vapour pressure is not part of the winter BEN equations.

S1.5 What is the acceptable range for olefins?

The regulations do not specify an acceptable range for olefins, since the level of olefins is not part of the BEN equations.

S1.6 Why are the level of aromatics and the value of the distillation fraction E300 modified under section 3 of the schedule?

These modifications are part of the Complex Model, and are therefore included in Schedule 1 of the regulations.

S1.7 How is the yearly pool average for BEN calculated?

The yearly pool average for BEN is calculated by volumetrically averaging the BEN value of each batch supplied during the year. (It is <u>not</u> computed by calculating the average of each model parameter and then calculating the BEN using these average model parameters -- refer to Note C to Schedule 3 of the regulations.)

Schedule 2: REGISTRATION FORM
(Also refer to section 7)

S2.1 Do I have to register?

Refer to the questions in section 7.

S2.2 Where do I send this form?

The form is sent to the applicable regional office of Environment Canada (addresses are listed in Appendix A).

S2.3 How do I register cargo tankers and other mobile blending facilities?

For cargo tankers, railway cars, boats, marine vessel and other mobile blending facilities, only the type and number of mobile facilities and the province of operation are listed on the registration form.

S2.4 What is a "typical annual volume"?

You must provide information on your "typical annual volume" of gasoline produced at each refinery, blended at each non-mobile blending facility and imported into each province. Note that estimates of typical annual volumes are not required for mobile blending facilities.

For the purposes of registering, Environment Canada considers "typical annual volume" to mean the usual volume of gasoline supplied or expected to be supplied during a calendar year. This could be, for example, the average production of gasoline at a refinery over the last few years, excluding years in which the refinery experience any major shut-downs. Information on typical annual volumes is intended as an aid to the administration of the regulations. In cases where annual volumes vary considerably, typical annual volume should be provided as a range.

Schedule 3: REPORT ON COMPOSITION OF GASOLINE
(Also refer to section 8)

S3.1 Where do I send this form?

The form is sent to the applicable regional office of Environment Canada (the addresses are listed in Appendix A).

S3.2 For which facilities do I submit this report?

The report must be submitted separately for each refinery, non-mobile blending facility and province of import, or any combination of them as has been made under section 18 of the regulations.

S3.3 How do cargo tankers and other mobile blending facilities report?

Mobile blending facilities, such as cargo tankers, railway cars, boats and marine vessel, are grouped by province of operation or with their associated non-mobile facility (refer to Note B to Schedule 3 of the regulations). Only one report is required for each such group.

S3.4 What is the format for the two annexes to this report?

There is no prescribed format for the annex on the dispatch and importation of gasoline-like blendstock or the annex on exceedances of the acceptable ranges.

MISCELLANEOUS QUESTIONS

OTHER QUESTIONS

O.1 How were the limits for benzene determined?

For benzene, a primary supplier must meet either (1) a per-litre limit of 1% by volume, or (2) a yearly pool average limit of 0.95% by volume with an associated never-to-be-exceeded cap of 1.5% by volume. Any person selling gasoline must meet the never-to-be-exceeded cap of 1.5% by volume.

Benzene per-litre limit: In July 1995, the Minister of the Environment announced that benzene would be reduced to 1% by volume. In October 1995, the Canadian Council of Ministers of the Environment (CCME) endorsed a recommendation that benzene should be reduced to 1% by volume or a lower annual average. The per-litre value of 1% by volume is the same as the level required under the U.S. reformulated gasoline program and California Phase 2 gasoline program and proposed for the European Union for the year 2000.

Benzene yearly pool average limit: The value of 0.95% by volume is the same as the value required under the U.S. reformulated gasoline program and British Columbia's *Cleaner Gasoline Regulation*.

Benzene never-to-be-exceeded cap: The never-to-be-exceeded cap of 1.5% by volume allows testing for compliance of gasoline anywhere in the distribution system. Other enforcement provisions that apply only for those who have elected to meet a yearly pool average include compliance plans, sampling and analysis requirements, retention of samples, and annual third-party audits. The cap also ensures that there are no significant regional or local disparities in benzene levels. Both the California and the U.S. reformulated gasoline programs have caps.

O.2 How were the limits for the benzene emissions number determined?

For the BEN, a primary supplier must meet either per-litre limits (a different number for summer and winter), or a yearly pool average limit with associated seasonal never-to-be-exceeded caps. The yearly pool average limit and the seasonal caps are either the national limits specified in the regulations, or facility-specific limits.

The BEN per-litre limits and caps are different in summer and winter. This is because the Complex Model equations, which are the basis for the BEN equations, are divided into summer and winter equations. For the purpose of the regulations, summer is defined to be from April 15 to September 15 and winter is the rest of the year. These dates are the same as those in British Columbia's *Cleaner Gasoline Regulation*.

Because of the complexities introduced by the seasonality of the BEN and the possible non-linear behaviour of the equations for co-mingled batches, there are no requirements on downstream sellers of gasoline to meet never-to-be-exceeded caps for BEN.

BEN per-litre limits: The BEN per-litre limits are proportionally higher than those for benzene. The explanation for this difference is that the intent of controlling the BEN is to achieve a freeze, whereas the limits prescribed for benzene achieve a reduction. The BEN limits of 71 for gasoline supplied during the summer and 92 for gasoline supplied during the winter are 140% of the respective seasonal BEN averages.

The values of 71 and 92 for the summer and winter BEN limits are approximately equal to the BEN values of gasoline that has a benzene level of 1% by volume (the per-litre limit), a sulphur level of 500 ppm and an aromatics level of 45% by volume in the summer and 40% by volume in the winter. Alternatively, the levels are also approximately equal to the BEN values of a gasoline that has a benzene level of 1% by volume (the per-litre limit), a sulphur level of 900 ppm and an aromatics

level of 35% by volume in the summer and 30% by volume in the winter.

National BEN yearly pool average limit: In October 1995, the CCME recommended that aromatics, or equivalent benzene tailpipe emissions, should be maintained at the 1994 average level (once the reduction in benzene is accounted for). The national yearly pool average limit of 59.5 is calculated using the benzene equations from the U.S. Complex Model (Phase 2 / Area C) (refer to Schedule 1 of the regulations) and the average Canadian 1994 baseline gasoline (which is presented below).

CANADIAN 1994 BASELINE GASOLINE

Parameter	Summer	Winter
Vapour Pressure (psi)	10.5	--
Benzene (% vol)		
1994 levels	1.7	1.6
Adjusted levels	0.95	0.95
Aromatics(% vol)	30.4	24.7
Sulphur (ppm wt)	371	348
Olefins (% vol)	10.3	11.2
Oxygen (% vol)	0	0
Distillation fractions		
E200(% vol)	49	58
E300(% vol)	83	87
Benzene Emissions Number (using adjusted benzene levels)	50.8	65.8

National BEN never-to-be-exceeded caps: The BEN caps are double the 1994 seasonal average BEN values, after adjusting for the reduction in benzene (that is,

102 for gasoline supplied during the summer and 132 for gasoline supplied during the winter). These values are approximately equal to the BEN values of a gasoline that has a benzene level of 1.5% by volume (the maximum allowed under the regulation), a sulphur level of 1000 ppm (the maximum allowed by the Canadian General Standards Board, and an aromatics level equal to the 95th percentile of 1994 aromatics levels (i.e., 46.2% by volume in the summer and 41.0% by volume in the winter).

The BEN caps at 200% of the average levels for BEN are proportionally higher than the cap set for benzene (~160%). As the intention for BEN is to freeze levels, not reduce levels as with benzene, a higher level is acceptable. (This would likely not be the case if BEN was being reduced.)

Alternative BEN limits: Refiners, importers and blenders can apply to use a yearly pool average limit for BEN and associated never-to-be-exceeded caps that are based on their own historical performance during 1994, 1995 or 1996 (once the reduction in benzene is accounted for). The method for determining historical limits is prescribed in subsection 17(3) of the regulations.

O.3 When will inspections take place?

Inspections by enforcement officers may be scheduled or surprise visits.

O.4 Do I have to submit to inspections?

Yes. Under the *Canadian Environmental Protection Act*, designated inspectors are authorized to conduct routine inspections to verify compliance with the regulations and the Act. The Act also requires that the owner or the person in charge to give the inspector reasonable assistance in their duties.

O.5 What are the penalties if I do not comply with the Benzene in Gasoline Regulations*?*

Compliance with regulations is mandatory. Environment Canada's Enforcement and Compliance Policy sets out the criteria for enforcement responses. Under the *Canadian Environmental Protection Act*, every person who is found guilty of contravening or failing to comply with the Act or its regulations is subject to fines, imprisonment or other court orders.

The *Benzene in Gasoline Regulations* also have two administrative penalties for those found guilty of contravening or failing to comply with the regulations: namely,

- upon conviction, the Minister may revoke a primary supplier's election to meet the requirements on the basis of a yearly pool average (subsection 15(3)); and

- upon conviction, a primary supplier can no longer use a statistical analysis program (paragraph 19(7)(c)).

In addition to financial and administrative penalties, if there is a contravention of the regulation, the Minister may require remedial measures, such as refunding or replacing product, a notice to customers, or publishing a public notice (refer to section 40 of the *Canadian Environmental Protection Act*).

A copy of Environment Canada's Enforcement and Compliance Policy is available on request from the address listed below:

Director
Office of Enforcement
Environment Canada
Ottawa, Ontario K1A 0H3

O.6 Is the information that I submit to Environment Canada to be kept confidential?

Information submitted to Environment Canada is treated pursuant to the *Canadian Environmental Protection Act* (in particular sections 19 to 24), the *Access to Information Act* and the *Privacy Act*.

As noted in the Regulatory Impact Analysis Statement that accompanied the regulations, the alternative BEN limits are to be publicly available. Also, Environment Canada intends to prepare reports, on a regular basis, comparing the actual performance of each primary supplier's facilities and imports to its regulated limits for benzene and the benzene emissions number. The reports will be available to the public and will be distributed to interested parties.

O.7 How do I obtain a copy of the Benzene in Gasoline Regulations*?*

The regulations were published on November 26, 1997 in the *Canada Gazette Part 2*, pages 3148-3186. While supplies last, copies may be obtained from the

address listed below (refer to Question N.1, below).

NEW QUESTIONS

N.1 How do I ask further questions on the Benzene in Gasoline Regulations*?*

Additional questions may be asked by sending your question, by mail or fax, to Environment Canada at the address or fax number listed below:

Manager
Oil, Gas & Energy Branch
Environment Canada
Ottawa, Ontario K1A 0H3

Fax: 819-953-8903

Replies will be provided to the sender. The question and reply may appear in any future versions of this guidance document.

Oil, Gas & Energy Branch
Environment Canada
May 27, 1998

Appendix A

ADDRESSES OF ENVIRONMENT CANADA'S REGIONAL OFFICES

Newfoundland, Nova Scotia, New Brunswick and Prince Edward Island

Director
Environmental Protection -- Atlantic Region
Environment Canada
45 Alderney Drive
15th floor, Queen Square
Dartmouth, Nova Scotia B2Y 2N6

Quebec

Director
Environmental Protection -- Quebec Region
Environment Canada
105 rue McGill, 7th floor
Montreal, Quebec H2Y 2E7

Ontario

Director
Environmental Protection -- Ontario Region
Environment Canada
4905 Dufferin Street
Downsview, Ontario M3H 5T4

Manitoba, Saskatchewan, Alberta and Northwest Territories

Director
Environmental Protection -- Prairies & Northern Region
Environment Canada
Twin Atria #2, 2nd floor
4999 - 98th Avenue
Edmonton, Alberta T6B 2X3

British Columbia and Yukon

Director
Environmental Protection -- Pacific & Yukon Region
Environment Canada
224 West Esplanade
North Vancouver, British Columbia V7M 3H7

Appendix B

ADDRESSES OF REFERRAL ASSOCIATIONS FOR AUDITORS

Standards Council of Canada
45 O'Connor St.
Ottawa, Ontario
K1P 6N7
Tel: 613-238-3222

Registrar Accreditation Board
611 East Wisconsin Ave.
Milwaukee, Wisconsin
53202-4606
U.S.A.
Tel: 414-272-3937