# Code of Practice for Motorsport Fuel - Storage and Handling

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| **Code of Practice** | **HSNOCOP32-1** |
| **Version** | **02-09** |
| **Date of Approval** | **24 March 2009** |

## Contents

## Preface

This Code of Practice (No. HSNOCOP 32-1) is approved pursuant to Sections 78 and 79 of the Hazardous Substances and New Organisms Act 1996 (HSNO Act). The Environmental Risk Management Authority has delegated the power to approve Codes of Practice to the Chief Executive of the Authority, and this code of practice is approved in accordance with that delegation. It is confirmed that the requirements of Sections 78 and 79 have been met.

Approval of this code is limited to those matters that relate to the HSNO Act and the regulations made under this act.

This code of practice has been developed by MotorSport New Zealand and sets out a means of compliance with the requirements of

- Schedule 10 of the Hazardous Substances (Dangerous Goods and Scheduled Toxic Substances) Transfer Notice 2004 in accordance with the provisions of clause 33(1)(b) of this Schedule, and
- Regulations 21, 22, 23 and Part 4 of the Hazardous Substances (Emergency Management) Regulations 2001, and
- the following clauses of Schedule 6 of the Hazardous Substances (Dangerous Goods and Scheduled Toxic Substances) Transfer Notice 2004:
    - Control – Hazardous Substances (Classes 1 to 5 Controls) Regulations 2001, Regulation 81, and
    - Control – Hazardous Substances (Packaging) Regulations 2001, Regulation 11, and
    - Control - Hazardous Substances (Emergency Management) Regulations 2001, Regulation 25

in respect fuels stored and handled at MotorSport New Zealand events.

The publication date in the Gazette for the Notice of Approval of this code of practice is expected to be 2 April 2009.

Pursuant to Section 80 (1) (a) of the Act, a copy of the code may be inspected at the Wellington office of ERMA New Zealand.

Pursuant to Section 80 (1) (b) of the Act, a copy of the code is available to download from the ERMA New Zealand website (www.ermanz.govt.nz).

Approved this 24 March 2009.

Rob Forlong
**Chief Executive**

## Acknowledgements

The following personnel and organisations contributed to the development of this guide.

Their assistance is appreciated.

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|---|---|
| Rex Alexander | Envirocom (NZ) Ltd |
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| Dianne Stockdale | Test Cert Solutions Ltd |
| Rex Clark | [Former] Chief Chemist – Marsden Point Refinery |


## Definitions

In this Code of Practice the following abbreviations and definitions apply;

"Code" means this Code of Practice for Motorsport Fuel – Storage and Handling.

"Diesel" includes diesel with up to 20% fatty acid ester (biofuel) component, and

"Endurance race" is a race of over fifty minutes duration that may involve the refuelling of vehicles during the race, and

"ERMA" means the Environmental Risk Management Authority, and

"HSNO" or "HSNO Act" means the New Zealand's Hazardous Substances and New Organisms Act, and

"Person in charge", in relation to a place, a hazardous substance location, a transit depot, or a place of work, means a person who is;
(a) The owner, lessee, sub lessee, occupier, or person in possession of the place, location, or depot, or any part of it; or
(b) Any other person who, at the relevant time, is in effective control or possession of the relevant part of the place, location, or depot, and

"Petrol" includes petrol (unleaded), racing gasoline and petrol / ethanol blends, and

"Pit garages" are defined as temporary or permanent structures built on the side of the working area of pit lane, and

"Sprint race" is defined as a race of up to fifty minutes duration, and

"Temporary" means a place where petrol and / or diesel is stored on a one off basis for a period less than five (5) days.

**Legislation referred to in this publication.**
Hazardous Substances and New Organisms Act 1996
Hazardous Substances (Classes 1 to 5 Controls) Regulations 2001
Hazardous Substances (Packaging) Regulations 2001
Land Transport Rule 45001/1
Hazardous Substances (Dangerous Goods and Scheduled Toxic Substances) Transfer Notice 2004

# Introduction

**Purpose of this publication**
MotorSport New Zealand Inc, Its member clubs, its competitors and officials have legal obligations under New Zealand statutes in relation to the transportation, storage and handling of fuels for motorsport venues or events. The purpose of this publication is to assist persons at motorsport venues or events to adopt safe practices for the transportation, storage and handling of motorsport fuel. This includes competitors, race teams, rally service crews and event organisers.

The specific purpose of this publication is to help the person in charge of a motorsport venue or event to obtain the test certificate(s) required by the HSNO Act and to act in compliance with the regulations made under the HSNO Act.

**Scope of This Code of Practice**
Improper handling of hazardous substances may cause injury, death or ill health to a person and damage to property or the environment. Hazardous substances may pose a risk to drivers, racing car support personnel, emergency services and the general public.

The aim of this Code is to ensure that motorsport competition car fuels are securely contained, thereby reducing the risks and helping to prevent accidental damage or injury to people, property and the environment.

The fuels shall be stored and located in accordance with this Code.

This Code applies to substances with hazard classifications 3.1A as determined by the HSNO Act.

This Code has been developed by MotorSport New Zealand and is intended primarily for the use of fuels at events organised by MotorSport New Zealand. It may however also be applied to similar situations elsewhere.

**Limits of this Code of Practice**
This Code applies to the storage and handling of fuels subsequent to the date of approval of this Code. This code applies to packaged fuels and is not applicable to fuels in bulk (i.e. fuels in transportable containers, bulk tank wagons or bulk tanks).

**Purpose of the HSNO Act**
The purpose of the HSNO Act is to protect the environment and the health and safety of people and communities by preventing or managing the adverse effects of hazardous substances. The requirements of the HSNO Act are in addition to other statutory requirements such as those in the Resource Management Act 1991, the Health and Safety in Employment Act 1992, Land Transport Rule: Dangerous Goods 2005 (Rule 45001/1) and other Land Transport Rules and the Building Act 2004.

These other legislative requirements include, for example, how a bulk fuel storage site or sites at a motorsport venue must manage drainage from its location.

**ERMA New Zealand**
The Environmental Risk Management Authority is the governing authority responsible for administering the HSNO Act. The Agency of ERMA New Zealand supports the Authority.

For more information about these bodies, go to ERMA New Zealand's website (http://www.ermanz.govt.nz).

**Enforcement of Motorsport events**
The Department of Labour enforces the HSNO Act at places of work and if and where appropriate the Health and Safety in Employment Act 1992.

If the event is not a place of work, the enforcement of the HSNO Act is undertaken by the territorial authority.

If the event is on a road, the enforcement of the HSNO Act is undertaken by the New Zealand Police.

Enforcement officers have the right to enter a property for the purpose of inspection. Enforcement officers will help persons in dealing with the compliance requirements of these Acts.

**Person in Charge [0.1] is responsible**
The person in charge is responsible for ensuring that all:

- The requirements of the HSNO Act are complied with
- The necessary test certificates are obtained.

**Notes:**
0.1. It is envisaged that the Person in Charge would
---For race meetings be a person appointed by the circuit operator / owner, and
-- For rallies the Clerk of the Course or an Assistant Clerk of the Course would assume the responsibilities.

**Test certifiers**
Test certifiers are people approved by ERMA New Zealand to issue test certificates required by the HSNO Act.

A test certifier will issue test certificates if compliance with the HSNO Act is demonstrated.

A register of test certifiers is on the ERMA New Zealand website (http://www.ermanz.govt.nz/search/tc.html).

# CHAPTER ONE

## Obligations of race competitors with transporting fuels to and from motorsport events.

## 1.1 Introduction

MotorSport New Zealand Inc its member clubs and its competitors and officials have legal obligations under the Land Transport Rule 45001/1 in relation to transporting fuels to and from motorsport venues or events. The purpose of this chapter is to provide guidance for race teams and rally service crews on transporting fuels to and from motorsport events by competitors.

## 1.2 Transporting fuel

The legal requirements are based on both the amount of fuel being transported and the reason the fuel is being transported.

### 1.2.1 Transporting amounts greater than 250 litres [1.1]

If the amount of fuel being transported exceeds 250 litres [1.1], but is not for reward or hire, i.e. you are not a transport operator, you will need either:

- a DG endorsement on your licence , OR
- an Approved Handler Test Certificate [1.2,]

### 1.2.2 Transporting amounts less than 250 litres.

**(a) For a commercial purpose [1.3]**

If you carry dangerous goods as tools-of-trade you do not need a "DG" endorsement, but you are responsible for:

- Making sure the fuel is properly packaged and identified
- Segregating incompatible dangerous goods (keeping them apart to prevent dangerous reactions) e.g. batteries separated from fuel containers.
- Securing the load on your vehicle
- Carrying Safety Data sheets [1.4] covering the fuel being transported.

**(b) For domestic or recreational purposes - for your own use**

You are responsible for:

- making sure the goods are properly packaged and identified
- segregating incompatible dangerous goods (keeping them apart to prevent dangerous reactions)
- securing the load on your vehicle

**Notes:**

1.1. The 250L limit is made up of all the fuel you are transporting, including what is being carried in the trailer and what is being carried in the tow vehicle. The fuel in the vehicles fuel tank does not count.

1.2. Refer to Chapter Three Article 3.9 for details relating to fuel handlers approval.

1.3. If you hire out your race car [e.g. arrive and drive type arrangement] and/or are operating a team on a commercial basis you come into this category.

1.4. The Safety Data Sheet(s) should be prominently placed so they are readily available in the event of any emergency.

### 1.2.3 Emergency response information

Land Transport Rule 45001/1 states under regulation 8.3 that a person who transports dangerous goods for hire or reward; or a person who transports dangerous goods for use as

tools-of-trade, for agricultural use, or for a commercial purpose; or a person who transports dangerous goods for domestic or recreational purposes when the quantity of goods transported for domestic or recreational purposes exceeds 250 litres [Packing Group II] must:

**(a)** Carry emergency response information for all the dangerous goods on the vehicle; and

**(b)** Keep the emergency response information in the driver's cab in an accessible position; and

**(c)** Be aware of:

**(i)** The hazards that the dangerous goods present; and

**(ii)** The procedures for their safe loading, handling and storage on the vehicle; and

**(iii)** The emergency procedures stated in the emergency response information.

Appendix D to this Code contains an Emergency Response Plan suitable for race / rally teams carrying petrol to, from and / or during an event.

## 1.3 Storage containers

Containers used for the transport or storage of fuels must comply with the regulations made under the HSNO Act. These include;

**(a) For containers up to 25 litres**

Must comply with AS/NZS 2906:2001, ASTM F-852-99el or be a previously approved container (i.e. with an LAB registration number marked on the container), and

- Have an appropriate sealing cap
- Be made of metal or a durable plastic that will not react with the fuel
- Be clearly labelled or marked to identify the fuel and the potential hazards e.g. petrol – highly flammable.

**(b) Containers greater than 25 litres capacity**

These include steel containers such as drums with appropriate sealing caps. They must be compliant and can be identified by being marked with the UN packaging symbol. They must be clearly labelled or marked to identify the fuel and the potential hazards.

## 1.4 Location Test Certificates and Approved Handlers Test Certificates.

### 1.4.1 Petrol (including petrol – biofuel blends)

**(a) Storage.**

If you are storing greater than 50 litres of petrol <u>away from the venue</u> (home garage, workshop etc) for 2 hours or more then you need a Location Test Certificate, unless it's in temporary storage.

**(b) Temporary Storage**

Up to 2000 litres of petrol may be stored for up to fourteen (14) days under conditions as detailed in Chapter Two of this booklet without a location test certificate. This applies only to "one off" storage at any one site. Notwithstanding this however, you are encouraged to get a location test certificate, particularly where the storage is for greater than five (5) days duration.

**(c) Handling.**

If you are handling greater than 100 litres of petrol, you are required to be an Approved Handler or an Approved Handler is required to be available.

### 1.4.2 Diesel

The storage and handling of diesel does not require either a location test certificate or an approved handler test certificate.

# CHAPTER TWO

## Fuel handling and storage protocols

### 2.1 Introduction

MotorSport New Zealand Inc competitors, race teams and rally service crews have legal obligations under the Hazardous Substances and New Organisms (HSNO) Act 1996 in relation to the handling and storage of fuel at motorsport venues or events.

The purpose of Chapter Two is to assist in adopting safe practices that comply with HSNO Regulations and controls, and that hazards associated with fuel handling and pit bay or service area storage are safely and effectively managed.

### 2.2 Fuel Storage and Supply.

Fuel storage in the context of this code is;

- An area set aside by the venue owner / operator or event organiser for competitors to store their competition vehicle's fuel overnight or throughout all or part of the event.
- An area in each competitors pit paddock or service park area where the pit crew or service crew can store a quantity of fuel sufficient to refuel the competition vehicle prior to its next segment of the competition at that event.

Fuel supply in the context of this code is a specific location at an event set aside to dispense fuel that is mandatory by class or category regulations for the event.

All category or championship class fuel supplies should be stored in sealed drums [or any other sealed storage containers that are approved for that purpose], under cover in specified locations at each event.

The Person in Charge [2.1] of the fuel supplies will:

**(a)** Advise the location of the fuel compound (storage and / or supply area(s)) to competitors at each event.

**(b)** Ensure that:

- There are persons appointed to dispense the fuel and oversee its storage in the compound area.
- All personnel involved with the dispensing of fuel **from the supply area** are wearing fire resistant protective overalls, gloves, balaclava, and safety goggles at all times while dispensing fuel.
- An additional person, in equivalent protective clothing, will also be assigned to a fire extinguisher during any fuel dispensing from this compound.
- No personnel except those actually involved in the fuel dispensing or with the fire extinguisher will be permitted within a 15 metre radius zone -- centred on the fuel supply compound.
- No smoking signs are displayed in the fuel compound area (6 metre zone).
- No sources of ignition such as cellphones, radios, car engines, BBQs, are operational within the fuel compound area (6 metre zone).

**2.2.1** Competitor's team personnel must wear protective clothing [2.2] within the fuel compound area (6 metre zone) OR wait in a place outside this zone as directed by the personnel dispensing the fuel.

**Notes:**
2.1. It is envisaged that the Person in Charge would
--- For race meetings be a person appointed by the circuit operator / owner, and
-- For rallies the Clerk of the Course or an Assistant Clerk of the Course would assume the responsibilities.
Refer also to the Definitions and Introduction sections of this booklet which outline the over riding responsibilities of the person in charge
2.2. For details on the minimum standards of protective clothing refer to the current MotorSport Manual Book One Appendix Two Schedule A Article 4.2 (3).

## 2.3 Pit Area - Service Park Practices and Competitors fuel supply.

**No Smoking:**
**The entire pits, service park and pit paddock areas is a no smoking zone.**
Each Category or Class Coordinator (in their absence this role reverts to the care of the Pit or Service Park Controller) will ensure that "no smoking" signs are placed in prominent positions throughout their area.

All fuel storage containers must be of a type approved for the storage of fuel (fuel dispensing personnel shall not transfer fuel into non-compliant containers) and must have the lid tightly closed at all times when not in use.

**Sprint race - Pit garage storage – during each day:**
Competitors will be allowed to store a **maximum of 40 litres** [2.3] during the day in their allocated pit garage at any time.

Fuel should be placed in a location least likely to be subject to any direct sunlight or other sources of heat.

Teams with multiple vehicles should ensure this fuel is not kept in a single location, but appropriately distributed and stored in each one of their designated bays so that no more than 40 litres is stored in any 3-metre radius.

**Endurance race Pit garage storage – during each day:**
Competitors will be allowed to store a **maximum of 209 litres** [2.3] during the day in their allocated pit garage at any time. Fuel should be placed in a location least likely to be subject to any direct sunlight or other sources of heat. [Refer also Appendix C to this Code].

**Pit garage storage – overnight:**
Unless advised to the contrary, at the conclusion of testing or competition each day of the event teams are required to remove all fuel [2.4] (and any other bulk containers of flammable fluids with the exception of aerosol cans) from the pit garages to a secure location outside the pit complex (e.g. race car transporter) or to the designated fuel storage compound area.

Storage will normally be inside a locked container store (converted shipping container) provided for the purpose of storing drum fuel in the fuel storage compound area. The Person in Charge of this area will advise storage container opening times on the official notice board.

No fuel (or other bulk flammable liquids) apart from that which is in the competition vehicle can be stored in individual pit bays overnight.

In situations where there is no designated overnight storage facilities provided it remains the competitors' responsibility to store the fuel off site in a location suitable for the purpose.

**Service Park storage – during the event:**
Competitors will be allowed to store in their service area **a sufficient quantity of fuel to refuel the competition vehicle at each individual service.**

All additional fuel for further services at that Service Park should be stored:

**(a)** In an area set aside by the organisers for the purpose, **or**

**(b)** Where the driver of the service vehicle holds a DG Extension on their licence then it may be stored in their service vehicle **provided that:**

- Such temporary storage respects the requirements of Chapter One of this booklet, **and**
- The DG Extension criteria are met.

In events where the rally organiser is dispensing all fuel supplies for the event [e.g. controlled fuel] the Person in Charge of this fuel storage compound will advise fuel storage opening times in the event supplementary regulations or where not practicable by bulletin or on the official notice board.

Fuel should be placed in a location least likely to be subject to any direct sunlight or other sources of heat.

All fuel storage containers must be of a type designated safe for storage of fuel (fuel dispensing personnel shall not transfer fuel into non-compliant containers) and must have the lid tightly closed at all times when not in use.

**Notes:**
2.3. This is in addition to the fuel in the competition vehicle.
2.4. The onus rests with the competitor to ensure all fuel storage containers placed in the storage container are closed tightly and clearly identifiable to their competition team.

## 2.4 Minimum Fire Extinguisher requirements:

All fire extinguisher(s) must have a minimum 30B rating. (The rating is on the label on the extinguisher.).

**In a pit garage or individual service area in a service park:**
All competitors must have at least one (for each car) Multi Purpose dry powder extinguisher (minimum size 4.5 kg), in their pit garage or service area at all times.

The fire extinguisher must be in an accessible location to the front of the area.

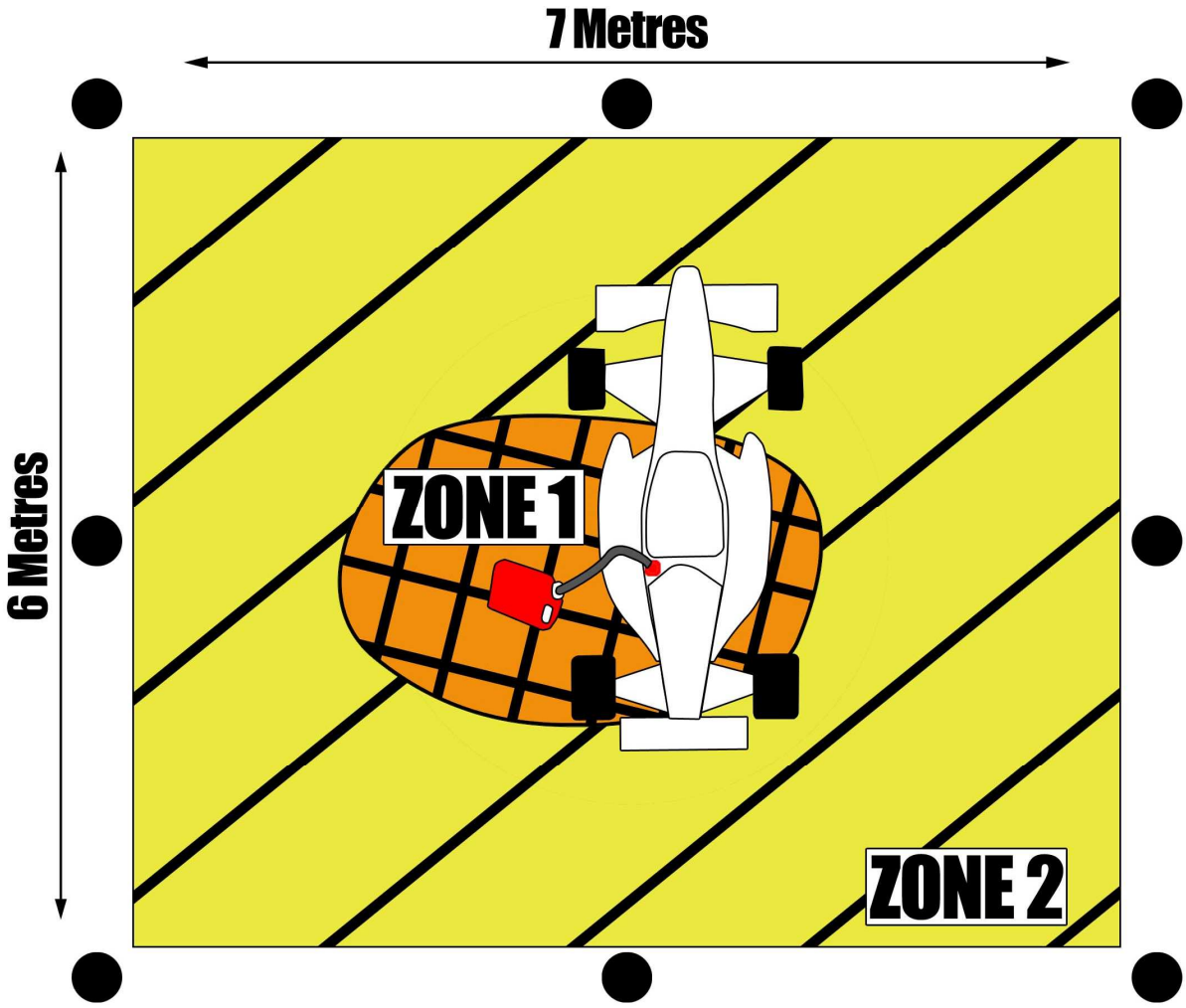
**In pit lane:** In addition to the extinguisher(s) in the pit garages, all teams shall have at least one Multi Purpose dry powder extinguisher (minimum size 4.5 kg), that is taken to pit lane each time the race car is testing or in competition.

For Endurance races the minimum extinguisher requirement is two x 9kg dry chemical fire extinguishers, in working order, for each competing vehicle.

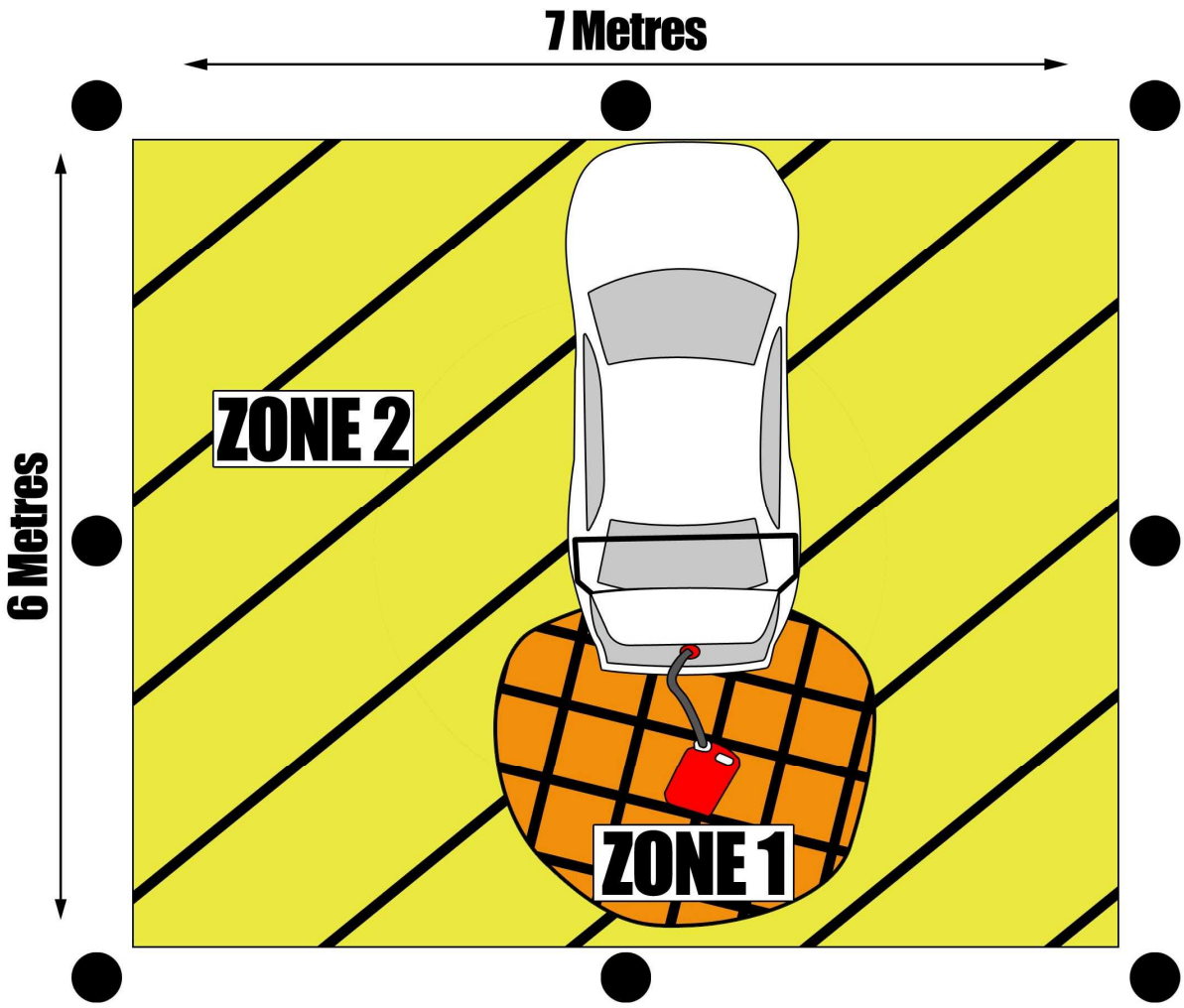
## 2.5 Refuelling or de-fuelling the competition car:

**2.5.1** At all times the transfer of fuel be it refuelling, defuelling or filling of fuel containers creates a need for extreme care. The following clauses detail motorsport event proven methods to minimise risks of fire or spillage. It is important that pit or service crews are fully briefed on the potential dangers and understand the needs for vigilance.

Whenever fuel is transferred fuel vapours exist and by understanding and managing these risks the process can be conducted without mishap. Article 2.8 of this Code details the requirements of Hazardous Atmosphere Zones and the following two illustrations show typical transfer activities.




| | |
|---|---|
| **Drawing 1: A Single seater undergoing fuel transfer in a typical pit garage.** **The whole garage area is a Zone 2 Hazardous Atmosphere zone while the immediate area around the fuel container and fuel tank filler is rated classified as Zone 1** | |
| Zone 1 | An explosive air–gas mixture is likely to occur during normal operation only occasionally. |
| Zone 2 | An explosive air–gas mixture is not likely to occur in normal operation and, if it occurs, will persist for a short period only. |




**Drawing 2: A Race or Rally Car undergoing fuel transfer in a pit garage or rally service bay**

**The whole garage area is a Zone 2 Hazardous Atmosphere zone while the immediate area around the fuel container and fuel tank filler is rated classified as Zone 1**

| | |
|---|---|
| Zone 1 | An explosive air–gas mixture is likely to occur during normal operation only occasionally. |
| Zone 2 | An explosive air–gas mixture is not likely to occur in normal operation and, if it occurs, will persist for a short period only. |

**Refuelling:**
For all refuelling (sprint race, service area and endurance race), funnels are not recommended; competitors are advised to use a manual pump system which has a low risk of spillage.

For an endurance race, where there is refuelling permitted during the race, all ancillary equipment such as refuelling rigs, hoses and couplings must be earthed at all times and be of a type approved by MotorSport NZ and / or the FIA.

When refuelling the vehicle [2.5,] competitors are required to have a crewmember [fire marshal], ready with an armed fire extinguisher, who is not part of the team carrying out the refuelling process.

For sprint race events no other work is permitted to occur on the vehicle during refuelling and de-fuelling. In endurance races and service areas involving refuelling other work is permitted [e.g. tyre changing, cleaning windscreens etc] provided that no spark generating devices are involved.

Fire resistant protective overalls, balaclava, gloves etc are recommended for competitors' team members involved in sprint race and service area refuelling but are compulsory for the crew members involved with endurance race refuelling [including the fire marshal].

All personnel not involved in refuelling must be vigilant and members of the public need to be kept well at least six metres away from the area.

**Defuelling:**
For all defuelling, funnels are not recommended; competitors are advised to use a manual pump system which has a low risk of spillage.

Should the in car fuel pump be used for defuelling then all power connections to manually operate the in-car fuel pump must be sealed electrical plugs. **Temporary alligator style clips or similar are not permitted.**

Should an external manual pump be used for de-fuelling then the pump must be earthed to prevent a build up of static electricity [2.6.]

During all de-fuelling of the vehicle competitors are required to have a crewmember [fire marshal], ready with an armed fire extinguisher, who is not part of the actual de-fuelling process.

Protective overalls, balaclava, gloves etc are recommended for competitors' team members involved in all defuelling.

**Notes:**
2.5. It is recommended that the car is on the ground with the wheels fitted, preferably half outside any marquee area, during refuelling and de-fuelling. Additionally it is suggested that this process should take place immediately prior to leaving the garage for the next session when the vehicle temps are at their coolest.
2.6. Competitors should at all times use procedures which will minimise static discharge during refuelling and de-fuelling.

## 2.6 Pit garage and service area practises:

At all times that fuel containers are in the pit garage or service area competitors are not permitted to perform any welding, grinding or other operation likely to cause sparks.

Care should also be taken when using any torches or portable AC powered lighting, to ensure that there is no ignition of any fuel vapours.

## 2.7 Fuel spillage:

If any fuel or oil is spilled on to the floor, (concrete, asphalt or grassed area) competitors are required to immediately attend to cleaning it up and notify The Pit or Service Park Controller as soon as possible.

In the case of fuel spillages, immediately evacuate the immediate area of all personnel not required for containing and cleaning up the spillage and ensure there are no sources of ignition in the vicinity.

## 2.8 Hazardous Atmosphere Zones:

Persons handling, storing or refuelling and / or defuelling must designate hazardous atmosphere zone(s) prior to handling or storing petrol. Details of hazardous atmosphere zones are in the standard AS/NZS 2403.3 Classification of Hazardous Areas and relevant information is given below:

### 2.8.1 Description of a hazardous atmosphere zone

A hazardous atmosphere zone is an area in which an explosive or a flammable atmosphere is present, or may be expected to be present, in quantities that require precautions.

Potential sources of ignition must be excluded from hazardous atmosphere zones.

### 2.8.2 Types

Hazardous atmosphere zones are categorised as one of three types, based on their likelihood and persistence (see the table below). Areas classified into these zones must be protected from sources of ignition.

| Types of hazardous atmosphere zones | |
|---|---|
| **Zone category** | **Description of zone** |
| **Zone 0** | An explosive air–gas mixture is continuously present or is present for long periods or frequently |
| **Zone 1** | An explosive air–gas mixture is likely to occur during normal operation only occasionally |
| **Zone 2** | An explosive air–gas mixture is not likely to occur in normal operation and, if it occurs, will persist for a short period only |

### 2.8.3 Potential ignition sources

Examples of potential ignition sources include electrical equipment, naked flames, sparks from grinding and welding operations, and hot surfaces.

### 2.8.4 Examples of hazardous atmosphere zones

At Motorsport venues or events, hazardous atmosphere zones typically exist in:

- Areas where petrol storage compounds are located
- Pit garages or service areas where petrol is stored or competition vehicles are being refuelled or defueled.

## 2.9 Container Store

Fuel containers up to 250 litres capacity may be stored in a container store provided that no more than 5,000 litres of fuel is stored inside any one such container store.

A typical container store is constructed of non combustible materials and consists of a shipping container [2.7] modified for the purpose. It shall:

- be capable of containing a minimum of 1000 litres of spillage, and
- be adequately ventilated with both high and low level vents, and
- have low level vents located below 1.5 m in height fitted with gauze no coarser than 500 micron, and
- be located such that secondary containment is provided for the full stored capacity of fuel. The secondary containment may be provided as part of the container store.

**Notes:**
2.7. The shipping container is a type B building for the purpose of Schedule 10 of the Hazardous Substances (Dangerous Goods and Scheduled Toxic Substances) Transfer Notice 2004.

# CHAPTER THREE

## 3.1 Introduction

The purpose of this chapter is to assist in how to evaluate above ground fuel storage systems to ensure they comply with HSNO Regulations and controls, and that hazards associated with fuel storage are safely and effectively managed.

This relates only to above-ground fuel storage. However, the principles outlined can relate to all forms of fuel storage at motorsport venues or events. [For race refuelling towers refer Appendix C to this Code.]

## 3.2 HSNO requirements for fuel storage at motorsport venues or events.

The Hazardous Substances and New Organisms (HSNO) Regulations have certain requirements for both the person in charge and the supplier.
These include:

- Supply of information.
- Fire extinguishers.
- Emergency response plans.
- Signage.
- Secondary containment.
- Certification

The amount of fuel which triggers the specific HSNO controls is set out in the table below. More detailed information about meeting these requirements is contained throughout the relevant sections of this document.

| Petrol storage requirements | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| HSNO Requirements for Petrol Amount of Fuel stored **Litres** | Fuel Supplier must supply Documentation | Person in Charge needs to have Documentation | 1 Fire Extinguisher | Training / Approved Handler | 2 Fire Extinguishers (Total) | Signage | Emergency Response Plans | Secondary Containment | Location Test Certificate | Tank Test Certificate |
| 5 | Yes | Yes | | | | | | | | |
| 50 | Yes | Yes | Yes | | | | | | | |
| 100 | Yes | Yes | Yes | Yes | | | | | **REC** | |
| 200 | Yes | Yes | Yes | Yes | Yes | | | | **REC** | |
| 250 | Yes | Yes | Yes | Yes | Yes | Yes | | | **REC** | |
| 1000 | Yes | Yes | Yes | Yes | Yes | Yes | Yes | **LOC** | **REC** | |
| 2000 | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | |
| 2500+ | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| **Below ground > 250 litres** | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |

This chart is based on the assumption that the fuel (petrol) will not be stored at the motorsport venue or event for more than 5 days and the storage is only on a one off basis. In this circumstance a location certificate is not required for quantities stored less than 2000 litres. In cases where the fuel will be stored for 6 days or more then a location certificate is recommended. If the storage is for 14 days or more, or the quantity is greater than 2000 litres or it is not a one off basis, then a location test certificate is a legal requirement.
**Refer Chapter Three Article 3.12 for further details.**
**REC** = Recommended
**LOC**= Located so that any spillage will not endanger any building, or flow into any stream, lake or natural water. Refer Article 3.8.

| *Diesel storage requirements:* | | | | | | | |
|---|---|---|---|---|---|---|---|
| HSNO Requirements for Diesel Amount of Diesel stored **Litres** | Fuel Supplier must supply Documentation | Person in Charge needs to have Documentation | 2 Fire Extinguishers (Total) | Signage | Emergency Response Plans | Secondary Containment | Tank Test Certificate |
| 1 | Yes | Yes | | | | | |
| 100 | Yes | Yes | | | | | |
| 200 | Yes | Yes | Yes | | | | |
| 250 | Yes | Yes | Yes | Yes | | | |
| 1000 | Yes | Yes | Yes | Yes | Yes | **LOC** | |
| 2000 | Yes | Yes | Yes | Yes | Yes | Yes | |
| 2500+ | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| **Below ground > 250 litres** | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| **LOC** On the basis that the fuel (diesel) will not be stored at the motorsport venue or event for more than 5 days, the storage is only on a one off basis, located so that any spillage will not endanger any building, or flow into any stream, lake or natural water. In all other cases secondary containment is required. Refer Chapter Three Article 3.8 for further details. | | | | | | | |

## 3.3 Isolation of Flammable Liquids

**3.3.1** At motorsport venues or events fuel storage shall be located so that it meets the parameters outlined below.

**Special Note:**
Specific events may vary these conditions only in cases where the individual location has been agreed in consultation with a Test Certifier and where the event regulations specify storage and handling conditions applicable to this variance, or as detailed in Appendix C to this Code for Endurance events.

**Petrol storage shall be greater than 15 metres from an ignition source.**

**Diesel storage shall be greater than 6 metres from an ignition source.**

Ignition sources include anything that could ignite vapour from the fuel storage area.

**Examples are:**

**(a)** Naked flames --- These include fires or incinerators (keep them well clear of the fuel storage area), plus the use of tools such as welders. It also includes smoking [smoking shall never be allowed within 15 metres of fuel storage.]
**(b)** Electrical appliances --- These could include electrical fittings such as switches, lights, three-pin plugs and switch boards, plus any electrically powered tools or machines.
**(c)** Running Engines --- These include compressors, freezer motors, etc. Vehicle motors shall be switched off when either delivering fuel, or when filling from the storage tank. An exception is the use of approved fuel dispensing equipment.
**(d)** Sparks from tools --- Any grinders or tools that could cause sparks (e.g. metal drills).
**(e)** Static electricity --- A sufficiently large build-up of static electricity will cause a spark to discharge, and if this happens in an area containing flammable vapours, fire or explosion can result. Build-up of static electricity can be lessened through earthing the fuel tank.

Metal tank supports provide a good earth contact, but where tanks are not earthed through a metal support structure, they must always be earthed using an earthing rod.

All fuel storage unless specifically detailed in special conditions of event regulations shall be:

- at least 20 metres from any area of high intensity land use [3.1] or regular habitation [3.2];
  - at least 6 metres from any other hazardous materials, e.g. oxidisers, fertilisers,poisons;
- at least 6 metres away from any combustible materials, e.g. LPG, other fuels;
- positioned so that spilt fuel cannot come into contact with any heated surfaces;
- positioned so as to avoid accidental collision by vehicles;
- positioned so that any spills will not contaminate streams, lakes or waterways.

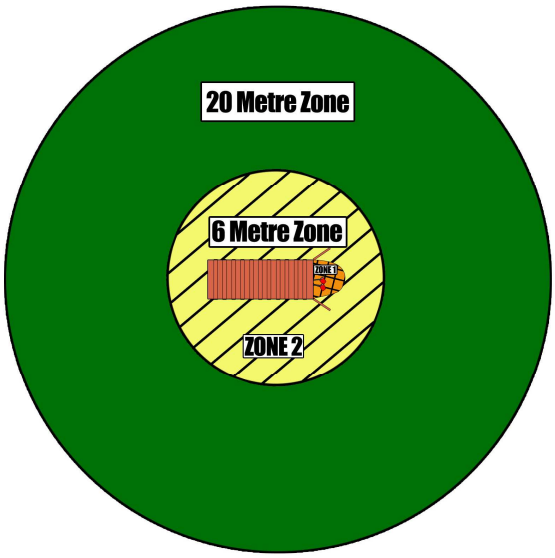
The isolation distance is extremely important when the storage area is either being filled [e.g. a delivery of drums into the storage area] or fuel is being drawn off.

**Notes**
3.1. Areas of high intensity land use are structures made of (or containing) combustible materials that would sustain a significant fire, or high density traffic routes.
Examples of areas of high intensity land use include: wooden buildings, pit paddock offices or sheds and other petrochemical storage.
3.2. Areas of regular habitation are buildings which are used for accommodation (i.e. include cooking, sleeping and ablution facilities) or any part of a building used for sleeping in conjunction with other buildings used for cooking and ablution, as well as areas where people regularly meet.

**3.3.2** Fuel storage containers should be positioned so that;

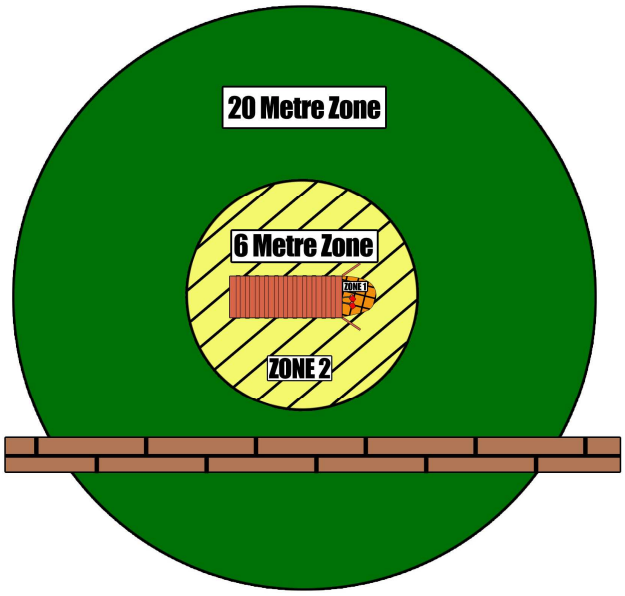
**(a)** They exceed the minimum isolation distances shown in the following three diagrams, and

**(b)** The opening doors of the container are faced a clear distance of at least 30 metres away from any public areas or areas of high activity




**Drawing 3: Example with 20' storage container in centre of compound**

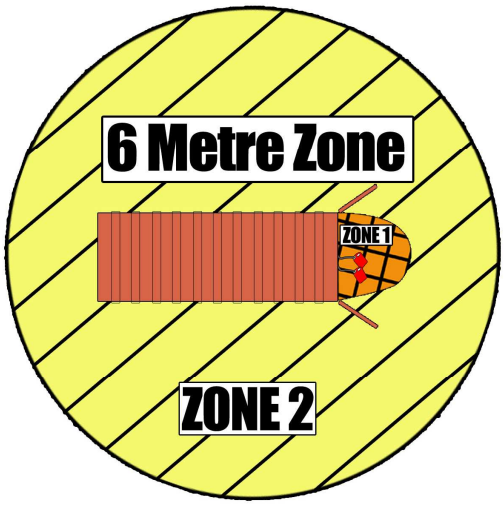
- **No buildings inside 20 metre zone**
- **No public or ignition sources inside a 15 metre radius**
- **No cellphones or radios inside 6 metre zone**
- **Crews would bring their containers to be filled to just outside the six metre zone**




**Drawing 4: Example of fuel compound using 20' vented steel shipping container with a high concrete wall or earth embankment at the rear of the compound that effectively prevents access to compound area.**

**The open side of the compound requires:**

- **No buildings inside 20 metre zone**
- **No public or ignition sources inside a 15 metre radius**
- **No cellphones or radios inside 6 metre zone**
- **Crews would bring their containers to be filled to just outside the six metre zone**




**Drawing 5: Expanded view of the 6 metre zone featured in drawings 3 and 4.**

- **The immediate area around the actual filling of approved fuel containers is a rated Hazardous Atmosphere Zone 1 status**

## 3.4 What to do in an Emergency – spillage or leakage

The immediate remedial action is to stop the spillage or leakage at the source, if safe to do so. Then:

- Stop the fuel escaping to drains or waterways.
- Clean it up (if it is safe to do so).
- Contact the fuel supplier or regional/district council regarding disposal of contaminated material. The regional/district council should be advised of any fuel spillage, especially if it endangers a waterway. Most councils have an Emergency Pollution Hotline.

With petrol spillage, special care should be taken to avoid any action that could cause ignition of the petrol vapours. This includes not using communications equipment within the danger area.

In the case of a fire, raise the alarm

- Phone the Fire Service.
- Fight the fire only if considered it safe to do so.
- Ensure all people are in a safe area.
- Do not put anyone at risk.

It is best practice to have details (e.g. plans) of drainage, stormwater and on site facilities such as interceptors available.

## 3.5 Emergency Response Plans

Where more than a total of 1000 litres of fuel (petrol, biofuel and/or diesel) are stored the person in charge of a place must provide an emergency response plan. Appendix B of this booklet contains a template which can be adapted to form an integral part of the required event or venue safety plan.

The plan must be tested at least every 12 months. [The Event Director appointed to oversee the annual MotorSport NZ Race Championship event at every circuit will ensure that all the required facets are tested.]

### 3.5.1 What is an emergency response plan?

An emergency response plan is a document which contains the information required to respond to an emergency involving fuel. The requirements for an emergency response plan are set out in Regulations 27-34 of the Hazardous Substances (Emergency Management) Regulations 2001.

In general terms to comply with these regulations, an emergency response plan must:

- Describe all of the reasonably likely emergencies involving the fuel storage facility; and
- Describe the actions to be taken in each of the likely emergencies; and
- Identify the people with responsibilities for response in each identified emergency, and the skills that they are required to have; and
- Specify where to find the information and equipment required to respond to each identified emergency; and
- Specify how to contact emergency services.

### 3.5.2 What do I do with my emergency response plan?

After the emergency response plan has been prepared, a copy must be available to every person handling the fuel and involved in the response along with being available for use by emergency services.

Every person who handles fuel at a motorsport venue or event should also be trained in how to deal with each emergency described on the emergency response plan. The plan must be tested at least annually and a record kept of such tests.

#### 3.5.3 Emergency Response Plan Guidelines for the Person in charge

- Where more than an aggregate total of 1000 litres of fuel is stored in a facility the Person in Charge shall ensure an emergency response plan has been prepared.
- The Person in Charge shall ensure the plan is available for each person who handles fuel at the venue or event, and that they are trained to handle emergencies involving fuel.
- The Person in Charge shall ensure that the plan is tested at least annually and a record kept of such tests.

## 3.6 Documentation

Regulations 6-20 of the Hazardous Substances (Emergency Management) Regulations 2001 stipulate the specific HSNO requirements for provision of documentation.

Information to be provided includes:

- Product information.
- Symptoms of exposure.
- Emergency management actions.

This information can be found in the Safety Data Sheets (SDS) for petrol or diesel.

#### 3.6.1 Documentation Guidelines for the Fuel Supplier

Fuel suppliers must provide a written copy of the SDS for each type of fuel delivered to each motorsport venue or event. If asked by a customer, the fuel supplier shall provide a written copy of a SDS for the fuel delivered as soon as is practicable.
In cases where the fuel is delivered by competitors to a storage compound then the person in charge is responsible for ensuring that an SDS is available for all the fuel stored.

#### 3.6.2 Documentation Guidelines for the Person in Charge

The person in charge of a venue or event where fuel is stored is required to ensure that a copy of the SDS [3.3] for each fuel type is;

- Available to any person who may handle that fuel and that the person is made aware where other copies are kept.
- Is located within 10 minutes of where that fuel is stored. This means that where there is an easily accessible building in close proximity the SDS could be stored in an easily accessible place within that building.

**Notes:**
3.3. It is recommended that copies of the Safety Data Sheets are displayed at key locations around the venue [e.g. Competitors pit bay if fuel is to be transferred from containers to vehicles AND at the fuel compound boundary].

## 3.7 Fire Extinguishers

The person in charge of a place **where more than 50 litres of petrol or 500 litres of diesel** is present must ensure the appropriate number and types of fire extinguishers are provided and placed within 30 metres of fuel storage.

### 3.7.1 Fire Extinguisher Guidelines for the Person in Charge

- The Person in Charge shall ensure that the appropriate number and types of fire extinguishers for the fuel stored are available within 30 metres of where the fuel is stored, but not attached to or under a fuel tank.
- Between 50 litres and 200 litres of petrol or biofuel require at least one fire extinguisher (with a 30B rating).
- More than 200 litres of petrol or biofuel, or more than 500 litres of diesel, require at least two fire extinguishers (each with a 30B rating).

### 3.7.2 Which type of Fire Extinguisher is Appropriate?

The fire extinguishers must be capable of extinguishing **Class B** fires (i.e. a fire involving a flammable or combustible liquid) and have a capability rating of at least 30B. The capability of a fire extinguisher will be written on the side of the fire extinguisher.

A 2kg dry powder or a 9 litre foam fire extinguisher would normally have a rating of 30B, and would therefore meet the HSNO requirement as one fire extinguisher. You should check and verify that all extinguishers are appropriate.

## 3.8 Secondary Containment Systems

Secondary containment systems contain fuel spills if a fuel tank leaks or is damaged, and enable the fuel to be cleaned up after a spill. A commonly used secondary containment system is a compound.

Where the fuels are stored in tanks, the secondary containment system must have a capacity capable of containing a spill equalling 110% of the tank capacity.

Where the fuels are stored in containers up to 450 litres capacity, the secondary containment system must be:

- If the total pooling potential is less than 5000 litres, the capacity of that pooling potential, or
- If the total pooling potential is 5000 litres or more, the greater of 5000 litres or half of the pooling potential.

Where <u>more than 2000 litres of petrol or diesel is stored</u> on a temporary basis the person in charge must ensure that fuel is stored in a compound. In all other circumstances the person in charge must ensure that fuel is stored in a compound if the aggregate quantity is greater than 1000 litres.

<u>Petrol, biofuel and diesel can be in the same compound but must be in separate storage</u>.

Petrol or diesel stored in quantities below these levels does not necessarily need to be stored in a compound, however it must be stored so that any spillage will not endanger any building, or flow into any natural water body.

### 3.8.1 What constitutes a Compound?

A compound is a form of secondary containment consisting of

**(a)** A hollow, pit or structure (bund) which is capable of containing any fuel spill from the fuel storage, OR

**(b)** A fenced or roped off area incorporating one or more steel vented shipping type containers specifically set up for the purpose of storing fuel and which have a floor constructed to contain spillage, OR

**(c)** A site specifically established for the purpose that meets or exceeds all of the

specific requirements of the current HSNO Act and where applicable other statutory requirements such as those in the Resource Management Act 1991, the Health and Safety in Employment Act 1992, and the Building Act 2004.

**3.8.2 A hollow, pit or structure (bund)**

To comply with HSNO regulations it must:

- Be of a size capable of holding 110% of the contents of the largest fuel tank stored in the area [there may be a number of containers , drums or tanks – the calculation is based on the largest single container, drum or tank volume]; and
- Be constructed of non-flammable materials (concrete, brick, HDPE, clay or similar); and
- Be constructed of materials that are impervious to the fuels, and
- Effectively retain the fuel if there is a spillage.

In areas with light, free draining soils (e.g. pumice or sandy soils), a compound must be lined with an additional impermeable layer (e.g. concrete, clay or brick) to stop spills entering groundwater.

**3.8.3 A fenced or roped off area incorporating one or more steel vented shipping type containers**

Can be a flat area preferable of concrete, seal or hard based soil large enough to stand one or more shipping type container [8',10'; 20' or 40' in length]. The compound should be sited so that emergency service vehicles have unimpeded access.

There should be at least a 20 metre radius of clear space around the containers and this area must be fenced, have temporary / permanent barriers or securely roped off to all public.

Within this area a smaller 6 metre radius around the storage containers exists which must be kept free of any spark generating device, cell phones and / or communication radios.

Each shipping type container must be vented and contain a bund wall immediately inside the opening doors. The bund wall must be installed so it is leak proof.

The height of this bund wall is determined in relation to the potential quantity of spillage containment required (able to contain at least 100% of the total fuel stored).

**(a) For example:**

*You have an 8' container in which you are storing eight (8) nominal 209 litre drums of fuel.*

***The minimum height of the bund wall has to be sufficient to contain 8 X 209 litres X 100% = 1672 litres.***

***The container measures 2.18 x 2.01 metres internally***

| | | |
|---|---|---|
| ***2.18 x 2.01*** | ***=*** | ***<u>4.3818 square metres</u>*** |
| ***1672 litres ÷ by 1000*** | ***=*** | ***<u>1.672 cubic metres</u>*** |
| ***1.672 ÷ 4.3818*** | ***=*** | ***0.3815.*** |

***Therefore to fit a bund wall to contain the 1672 litres of fuel the bund needs to be at least 381 mm high.***

**(b) Recommendations:**

- Always err on the side of caution and create the bund higher than required. In this example the bund would be better at least 400mm in height.
- It is recommended that you also have available absorbent type crystals or powder [supplied in an approved fuel spill kit] to cover any small spillages.

**3.8.4 Spill Kits**

Basic spill kits may assist containment and cleanup of spills from a fuel container. The spill kit may consist of a load of sand, or some other absorbing material beside the storage area to soak up any spills before they endanger the environment.

Commercial spill kits are available that include absorbent pads or booms. It is recommended that Event or venue organisers consult with their fuel suppliers to arrange the purchase of an approved type kit.

**3.8.5 Fuel Containment Guidelines for the (Person in Charge)**

The person in charge shall ensure that;

- Any fuel stored is located so that any spillage will not endanger any building or flow into any stream, lake, or natural water.
- In situations where more than 2000 litres of fuel is stored at a temporary location. A compound is used which will contain fuel spills if a fuel container leaks or is damaged.
- In other locations where more than 1000 litres of fuel stored, a compound is used which will contain fuel spills if a container leaks or is damaged.
- That a basic spill kit is available to assist containment and cleanup of spills.
- Any compound includes a method for draining water when needed (e.g. a closed valve at the lowest point), and be regularly cleared of leaves and other rubbish so that the capacity of the compound is not reduced.

## 3.9 Training and Approved Handlers

People who are involved with the handling and storage of fuels need to receive training covering:

- The hazards associated with the fuels.
- Its safe use and handling.
- The steps to be taken in the event of spillage or other emergency.

Alternatively they can be under the direct supervision of someone who has appropriate training and experience.

Where more than 100 litres of petrol is stored, the HSNO Regulations require the person in charge to ensure that an Approved Handler is available to provide assistance, if necessary, while petrol is being stored or handled. Note that an Approved Handler is not required for diesel.

**3.9 1 Who is an Approved Handler for motorsport venue and event petrol storage?**

An approved handler is a person who has been certified (by a Test certifier) as having met the requirements of Regulation 5 of the of the (Personnel Qualifications) Regulations 2001 for experience and training in handling petrol.

In general terms these requirements are:

- Knowledge of the requirements of the HSNO Act and regulations.
- Knowledge of petrol and its hazards.

- A working knowledge of the operating equipment used to handle petrol and biofuel.

The Approved Handler may be the person handling the petrol, someone available at the venue, or someone contactable by telephone.

Whilst it is not necessary for an Approved Handler (for petrol) to be on-site, this is best practice.
As a minimum, the Approved Handler must be immediately available (e.g. by telephone) to provide advice and/or assistance when it is required by the person handling the petrol. The person on site must have received training on fuel handling.

**3.9.2 Training Guidelines for the Handler (Person in Charge)**
The Event or Venue organisers shall ensure that anyone [3.4] who is required to use the fuel storage system on their venue or at their event has been properly trained in:

- How to use the fuel storage facility safely [3.5]; and
- What the potential hazards are when using the fuel storage system, and the precautions to be taken including the use of protective clothing and equipment; and
- What to do in the case of an emergency, (e.g. a fire, medical emergency, or a fuel spill).

**Notes:**
3.4 The Event or Venue organisers shall ensure that where petrol is stored an Approved Handler has been identified and that the Approved Handler will be available to provide assistance, if necessary, while petrol is being handled.
3.5. See also Chapter Three Art 3.5 Emergency Response Plan Requirements.

## 3.10 Signage

Signage is required where more than 250 litres of petrol; or more than 1000 litres of diesel is stored at a motorsport venue or event. This is required irrespective of whether the fuel is stored in drums or bulk tanks.

The signs must comply with the HSNO regulations and signs must be located where they will be noticed by persons entering the site where fuel is stored.

Compliance with the HSNO regulations requires the signs to:

- Advise that the location contains hazardous substances;
- Describe the hazardous property and nature of the hazard(s) of the substance;
- Describe the precautions needed to safely manage the substance;
- Describe the precautions needed to avoid ignition of the substance;
- Identify appropriate emergency response agency(s) or personnel and the means of contacting them;
- Provide sufficient information to advise any of the trained persons and the emergency service provider(s) of the immediate emergency response actions for the hazardous substances present;
- Be easily understood; and
- Be able to be easily read at a distance under varying conditions.

A tank label, A3 in size, fulfils the signage requirements of the HSNO regulations and no other signage is necessary for fuel storage however one or more of the applicable pictograms are recommended as additional signage.

Examples of tank and or storage container labels and pictograms suitable for use in association with fuels at a motorsport venue or event are shown in Appendix A

## 3.11 Tank Labelling

When using an above ground fuel tank the contents must be identified, preferably with a tank label or through colour-coded marking.

This should be clearly placed on the tank so as to be easily read from ground level.

## 3.12 Location Test Certificates

A Location Test Certificate verifies that hazardous substances are stored in accordance with the regulatory requirements i.e. away from other structures, combustible materials, dwellings, and ignition sources.

The emergency preparedness including secondary containment is also verified.

Location Test Certificates are issued by test certifiers.

### 3.12.1 Location Test Certificate Requirements for Diesel at motorsport venues or events.

Storage of diesel does not require a Location Test Certificate, regardless of quantity.

### 3.12.2 Location Test Certificate Requirements for Petrol at motorsport venues or events.

**(a)** Storage of petrol above ground in quantities up to 2000 litres <u>will not require</u> a Location Test Certificate providing that:

- The location is used for temporary use only. [Refer to clause (ii) below for clarification of temporary use.]
- The containers must be compliant with the requirements for design, construction and installation.
- The containers must be located at least 20 metres from dwellings or other buildings made of combustible materials and at least 6 metres from any combustible materials.
- The containers must be in a compound (bund) or located so that any spillage will not endanger any building, or flow into any natural water body.
- The capacity of each container must be less than 250 litres.
- All the regulatory requirements (for a location test certificate) are still met.
- Ideally drums would be stored inside a steel [shipping type] container that is fitted with vents. Immediately inside the container doors a false wall of at least 150mm high by 50 mm width would be installed at the lower edge to act as secondary containment bund (spill containment lip).

  At least one approved type spillage kit would be placed immediately inside to be used in the event of spillage from one or more of the fuel nominal 209, 60 or 20 litre capacity containers stored inside.
  The storage steel [shipping type] container(s) would be located in a clear area fenced or roped off to form a compound.

**(b)** A Location Test Certificate will be required for petrol if:

- An individual container is 250 litres capacity or greater; or
- The quantity stored exceeds 2000 litres; or
- Storage is not in compliance with the conditions detailed in clause 3.12(a) above (and over 50 litres); or
- Where it is used to store petrol on a regular basis, even though each storage period is only for short duration [this does not constitute temporary use], or
- Storage is below ground.

## 3.13 Stationary Container System Test Certificates (SCS - Tank Test Certificates)

A Stationary Container System Test Certificate verifies that a stationary container system (tank) meets the legal requirements specified in Schedule 8 of the Hazardous Substances (Dangerous Goods and Scheduled Toxic Substances) Transfer Notice 2004 (as amended).

The certification of stationary container systems is done by a Test Certifier approved to issue test certificates for stationary container systems.

### 3.13.1 Stationary Container System Test Certificate Requirements for Diesel

Above ground storage of diesel in tanks greater than 5000 litres will require a Stationary Container System Test Certificate.
All below ground tanks of diesel greater than 250 litres will require an SCS Test Certificate.

### 3.13.2 Stationary Container System Test Certificate Requirements for Petrol

Above ground storage of petrol in tanks greater than 2500 litres will require a Stationary Container System Test Certificate.
All below ground tanks of petrol greater than 250 litres will require an SCS Test Certificate.

## 3.14 Tank Ventilation

Adequate ventilation of the tank is required to prevent splash back during the filling process and to prevent an unsafe pressure or vacuum developing in the tank.

The air vent should be separate from the filling point unless the filling point is of adequate size to allow the safe displacement of the air during the refilling.

If a ventilation pipe is required it should not be less than half the size of the filling pipe with a minimum size of 25 mm diameter. The ventilation pipe must be kept free of obstructions.

Where air vents are fitted, the air vent shall have gauze fitted of the appropriate size for the fuel being stored.

**For petrol tanks,** the gauze in the vent shall be of a brass wire, of 500 microns gauge. This acts as a flame arrestor should there be a flashback of vapours to the tank.

**For diesel tanks,** the gauze can be coarser as the main purpose is to prevent material going into the vent.

**Tank Fill Pipe**
Tanks used for the storage of petrol must have a fill pipe extending from the fill point to at least 25 mm below the lowest level of the liquid in the tank.

## 3.15 Safe Filling of Drums used for Fuel Storage

The requirements for emergency response plans, signage, fire extinguishers, training, Approved Handlers and documentation also apply to motorsport fuel storage in drums.

Incorrect filling of drums [3.6] may lead to inhalation of hazardous vapours, or a build-up of static electricity that may result in a fire or explosion. It should be noted that:

- Drums must not be filled inside buildings;
- Some fuel delivery companies do not have the equipment to safely fill drums with fuel and may refuse to do so;
- Other fuel providers may have additional requirements for filling drums with fuel.

Avoiding Static Electricity
A sufficiently large build-up of static electricity will cause a spark to discharge. If this happens in an area containing flammable vapours a fire or explosion can result. This can be avoided by:

- Never using any equipment made of plastic or synthetics.
- Ensuring that all plant, equipment and people are earthed before commencing filling of each drum by attaching earth clamps [3.7.]

**Notes:**
3.6. Drums which meet the requirements for class 3.1B (for petrol) or 3.1D (for Diesel) should meet these requirements; however check with the manufacturer or supplier before purchasing drums for this purpose.
3.7. Remember that paint is an insulator so bonding clips must be made to bite through the paint. --- Earth clamps must have at least one bare metal handle (to earth the person filling the drums).

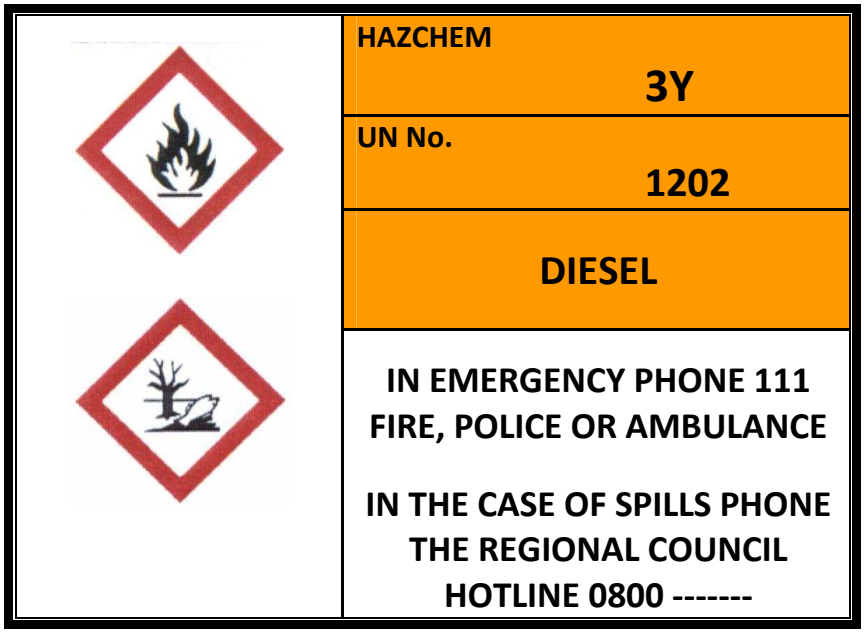
# APPENDICES

## APPENDIX A --- LABELS AND PICTOGRAMS

**(1) Tank / Storage Container Labels for Diesel HAZCHEM 3Y**
**Example A**

**HAZCHEM** 3Y

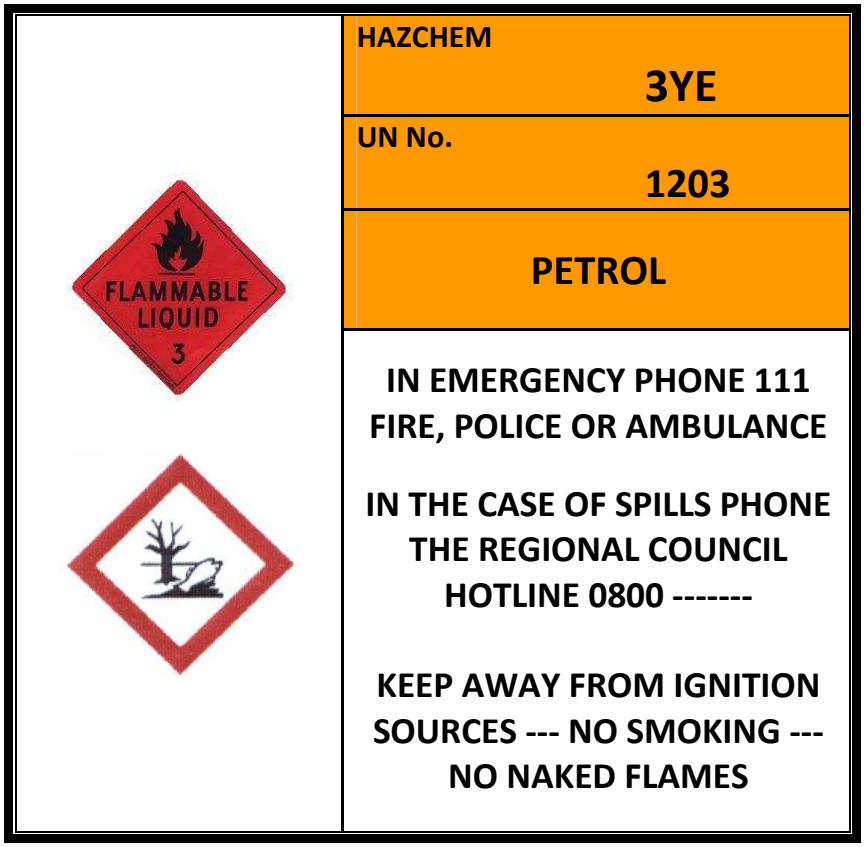
**Example B**



**(2) Tank / Storage Container Label for Petrol HAZCHEM 3YE**
**Example A**

| HAZCHEM | 3YE |
|---|---|

**Example B**

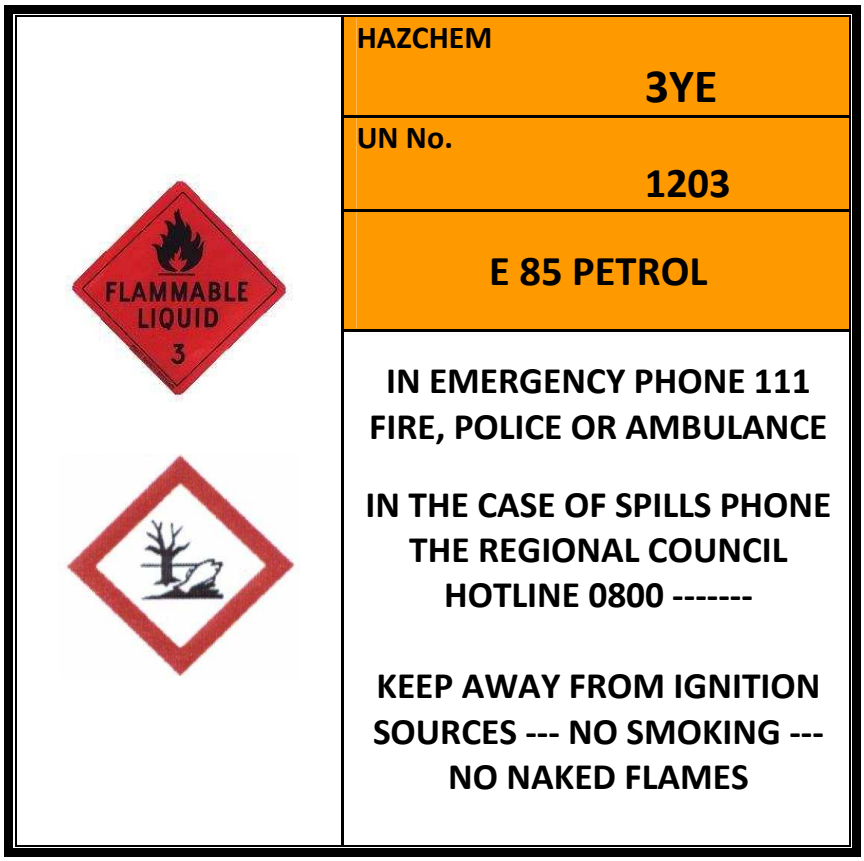


**(3) Tank / Storage Container Label for E85 Petrol HAZCHEM 3YE**

**Example A**

**HAZCHEM** 3YE

**Example B**




**NOTES:**

**GIVEN THAT AT ALL MOTORSPORT EVENTS THERE IS FIRE FIGHTING AND MEDICAL SERVICES THE NEED TO QUOTE "Phone 111" IS NOT A NECESSITY. HOWEVER IT SHOULD BE CLEAR IF THERE ARE ALTERNATIVE CONTACTS.**

**CONTACT THE LOCAL OR REGIONAL COUNCILS TO OBTAIN THEIR POLUTION HOTLINE NUMBER FOR THE SIGNS**

## (4) Pictograms for Petrol, bio fuel and diesel.

| Hazard and Precautionary Information for Petrol and Diesel at a motorsport venue or event. | | | | |
|---|---|---|---|---|
| **HSNO Classification** | **Pictogram** | **Hazard Statements** | **Prevention Statements** | **Response Statements** |
| **3.1A (Petrol)** |   | Extremely flammable liquid and vapour | Keep away from heat, sparks or open flame. - No smoking.<br><br>Wear protective gloves and eye/face protection | IF ON SKIN (or hair): Remove immediately all contaminated clothing. Rinse skin with water.<br><br>DO NOT fight fire when fire reaches fuel storage.<br><br>Explosion risk in case of fire.<br><br>In case of fire, evacuate area. |
| **3.1D (Diesel)** |  | Combustible liquid | Keep away from heat, sparks or open flame. - No smoking.<br><br>Wear protective gloves and eye/face protection | DO NOT fight fire when fire reaches fuel storage.<br><br>Explosion risk in case of fire.<br><br>In case of fire, evacuate area.. |
| **9.1B (Diesel, petrol and petrol/ethanol blends)** |  | Toxic to aquatic life with long lasting effects | Do not release to the environment | Collect spillage. |
| **Decals of all the above pictograms in either hard based plastic or high gloss adhesive backed materials are readily available from sign writers and safety supply agencies.** | | | | |

# APPENDIX B --- FUEL EMERGENCY RESPONSE PLAN TEMPLATE

*Note: This plan should be adapted to form an integral part of the required event or venue safety plan. It must include references to all of the following and particularly as to how the alarm can be raised [e.g. by radio: cellphone; landline to event control and / or a combination of these.*

## A: Preamble:

**The first priority in the event of an emergency is for the safety of all persons present at the venue.**

Fuel will either be stored or contained in;

- the designated fuel storage area, or
- a competitors service area in the pit paddock, or
- in the pit garage for endurance races, or
- in the approved fuel tank on board a competition car.

The Clerk of the Course must designate a "person in charge" for all fuel storage and handling.

The following sections deal with fuel emergencies under the headings of: Fire; Fuel Spill.

## B: Fire:

| Fire Emergency Checklist | Precautions |
|---|---|
| 1. Raise the alarm and evacuate people from the area.<br>2. If a small fire, use a fire extinguisher if it is safe to do so to attempt to contain or extinguish the fire.<br>3. If a large fire, do not attempt to extinguish the fire retreat to a safe distance.<br>4. Call Race Control to alert all emergency services.<br>5. If possible isolate the source of the fire.<br>6. Advise the person in charge.<br>7. Ensure all roadways are clear so the fire appliances can reach the scene quickly and safely. | • Do not endanger yourself.<br>• Do not put water on petrol or electrical fires.<br>• Do not leave the fire site unattended if there is a risk of a further outbreak. |

## C: Fuel Spill:

| Spill Checklist | Precautions |
|---|---|
| 1. Raise the alarm and evacuate people from the area.<br>2. If possible isolate the source of the spill.<br>3. Call Race Control to alert all emergency services.<br>4. Advise the person in charge.<br>5. Utilise spill kit to control the spread of the spill.<br>6. Ensure all sources of ignition are removed from the proximity.<br>7. Refer to the Safety Data Sheet for the fuel handling details [copy is appended to this safety plan] – *Ensure the Safety Data Sheet is the one applicable to that type of fuel.*<br>8. Ensure all personnel dealing with the spill are clothed as directed by the appropriate handling requirements.<br>9. Ensure all roadways are clear so the emergency services can reach the scene quickly and safely.<br>10. Dispose of any waste safely as set out in the Safety Data Sheet.<br>11 If necessary advise the local Council of the spillage and details of the clean up process. | • Do not endanger yourself.<br>• Do not leave the spillage site unattended if there is a risk of a further leak.<br>• If the spillage is likely to enter a stormwater system or waterway notify the district/regional council.<br>• Ensure you list the councils pollution hotline number in your safety plan |

## APPENDIX C

## PART ONE - ENDURANCE RACE PROCEDURES

**PREAMBLE**
With the need to have a quantity of fuel close at hand in the pit lane / pit garage areas to allow for refilling of the FIA approved refuelling tower systems and / or MotorSport NZ approved refuelling systems the following conditions over ride those contained in Chapters One, Two and Three of the Code of Practice for Motorsport Fuel – Storage and Handling

The changes detailed below do mean that competitors and their pit crews must be extremely vigilant in attention to detail with all of the following requirements.

**1. FUEL STORAGE**
All areas in which fuel is to be stored must be:

- Adequately ventilated, and
- Have unimpeded access; and
- Free of potentially flammable materials (e.g., paper, rags, oily fabrics etc),and
- Should be at least 6 metres from any ignition source (examples listed in Code of Practice Chapter Three Article 3.3).

The maximum quantity of fuel that can be stored in the pit garage is a 209 litre container, of a type approved in the Code of Practice.

This 209 litre container must be clearly identified with the appropriate pictogram (detailed in Code of Practice Appendix A).

**2. SAFETY**
Competitors must provide at least 2 x 9kg dry chemical fire extinguishers, in working order, for each competing Car.

At least one of these extinguishers shall be located in a clear space near the fuel container and all members of the team shall be briefed as to the operation of the extinguisher.

Any device and substance, which changes the temperature of the fuel from the ambient air temperature, is prohibited. All fuel being placed in the vehicle must be done so at ambient temperature.

**3. REFUELLING PROCEDURES**
**3.1 Refuelling During Sessions and Races**
Refuelling during any session or Race must only be carried out using either an FIA approved refuelling tower, or a system approved by MotorSport NZ [*refer Schedule at the end of these regulations.*

### 3.2 Use of FIA Refuelling Towers and / or MotorSport NZ approved systems for Race refuelling

**(a) Manning requirements:**

A minimum number of three (3) Attendants must be present, and their tasks are:

- Fire Marshal – whose sole task is to operate fire extinguisher; and
- Refueller/Vent Attendant(s) – whose sole task is to operate the refuelling/vent hose.; and
- Deadman's Handle Attendant – whose sole task is to operate the fuel cut-off valve on the refuelling tower.

All Attendants must be attired as specified in Code of Practice Chapter Two Article 2.5.

(b) For the duration of any pit stop in which refuelling is undertaken, the Fire Marshal must be ready to attend to any fire which may occur and must stand near the Car and the refuelling tower, poised with the extinguisher ready to operate.

(c) Any approved type refuelling tower must either remain behind the prescribed line pit working area line or be wholly within the Pit Garage (whichever is deemed appropriate by the Clerk of the Course) and must not be moved once filled.

(d) The fuel delivery hose may only be moved into Pit Lane from the Pit Garage a maximum of three (3) minutes prior to any pit stop. While in Pit Lane, the fuel delivery hose must at all times be held by the relevant Attendant.

(e) During any Meeting in which refuelling is permitted, the refuelling system (including the refuelling tower, tank, hoses, valves and dry break fittings) must all be electrically connected to a grounding connection for the duration of the activities.

The vehicle must also be connected, at least momentarily, to one of these grounding connections before refuelling can commence.

(f) The above regulations are equally applicable when refilling the refuelling tower or approved system

(g) All installations and equipment may be the subject of an inspection at any time throughout any Meeting or Event during which refuelling is permitted in Pit Lane.

### 3.3 All Other Refuelling

All refuelling other than that carried out during a session or a Race must be carried out in accordance with Code of Practice Chapter Two Article 2.5.

## PART TWO - SCHEDULE OF REFUELLING COUPLINGS AND EQUIPMENT APPROVED FOR ENDURANCE RACE REFUELLING.

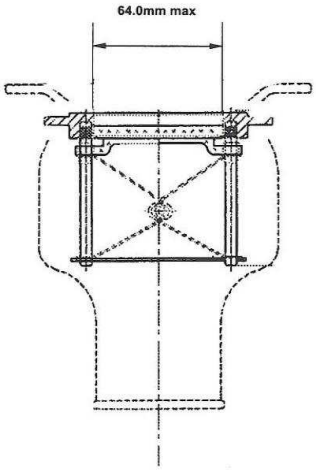
***Note:***
***1. This list features equipment by type that is currently approved at the date of this publication.***

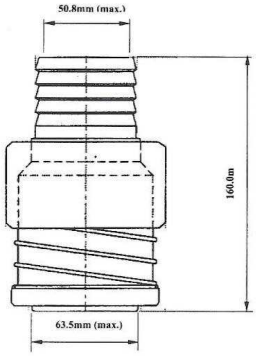
*Competitors seeking to gain approval for additional systems or types of equipment that may differ from those already approved should contact:*
*The Technical Manager*
*MotorSport New Zealand Inc*
*Giving a full description (including photographs) of the equipment that they seek approval for.*

*MotorSport New Zealand Inc reserves the right to charge a fee for any approval requests.*

***2. Vent fills material.*** *The air vent shall have gauze in the vent typically of a brass wire, of 500 microns gauge. This acts as a flame arrestor should there be a flashback of vapours to the tank, OR Use a fuel resistant polyurethane foam baffling, conforming to Mil Spec MIL-B-83054, SAE-AIR-4170 or equivalent.[of a type installed in FIA approved bag tanks.*

**REFU 001 FIA DRY BREAK FITTINGS**
General Design of Dry Break Fittings

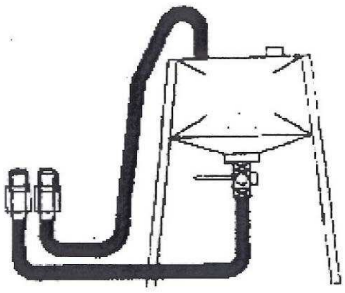


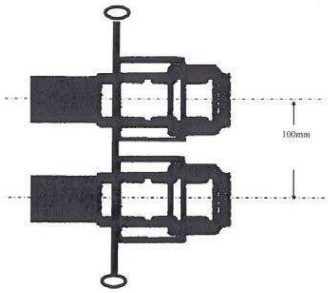




Standard dry break fittings (male and female)

Service Note: O-rings must be regularly inspected and replaced if there are any signs of expansion or damage; and springs and tracks must also be regularly inspected and kept lubricated during those times the refuelling valves are not in operation.

**REFU002 FIA REFUELLING TOWER**






Requirements:
(a) The maximum capacity of the tower, including the delivery hose, must not exceed 220 litres.

(b) The maximum height of any part of the tower which contains fuel is two metres above the Pit Lane; only non-fuel holding connections and vents are permitted above this height.

(c) All towers must be fitted with a ball cock or similar fast action cut-off valve, which must work on the "deadman handle" principle.
The cut-off valve must be attached directly to the fuel reservoir and must close immediately, stopping the flow of fuel from the reservoir, when pressure on the handle of the cut-off valve is released. The closing principle of the cut-off valve must not rely on the action of gravity alone.

(d) The emergency cut-off valve Attendant ("deadman's handle Attendant") must only hold the valve open for the duration of a refuelling operation.

(e) Towers should incorporate a "siamese" filler/vent configuration which is to be operated by a single refueller/vent Attendant and returns all displaced fumes from the vehicles fuel tank to the ullage space in the reservoir of the refuelling tower.

(f) A single fuel delivery hose, which must be of a flexible rubber or a fuel resistant reinforced plastic material, must be connected to the emergency cut-off valve. The flexible part of the hose must be at least 2.5m in length and of an ID no greater than 50mm (2 inch).

(g) The maximum inside diameter of the vent hose is 50mm (2 inch).

(h) The vent hose used to direct the expelled fumes from the vehicle to the refuelling tower must remain open at all times. No device may restrict the flow of these fumes for the duration of the refuelling operation.

(i) The reservoir must be vented via an explosion safe shielded vent [e.g. vent with suitable gauze, foam or "explosafe" material installed inside – refer notes at commencement of Part Two above]. This vent must be open at all times and only atmospheric pressure may be

exerted on the fuel in the main reservoir. No artificial pressurisation of the reservoir is permitted.
*Note: In cases where a separate vent bottle is used to capture the air / fumes being expelled from the vehicles fuel tank during refuelling then the air vent on the top of this vent bottle requires an explosion safe material to be installed into the vent [refer notes at commencement of Part Two above].*

(j) A filling orifice (maximum inside diameter of 50mm) may be fitted to the main reservoir. The refilling of a refuelling tower, while a vehicle is being refuelled from that refuelling tower, is not permitted.

(k) All refuelling towers manufactured after 1st January 2001 must include 10% ullage (air space) at all times within the reservoir.

## APPENDIX D

**Sample Emergency Response Plan for motorsport crews carrying fuel to, from or during an event.**

**[Keep this card in a prominent place in the vehicle where it is readily available to the driver]**

## Dealing with a dangerous goods emergency situation involving

… Fuel spillage

**Precautions**

- Do not endanger yourself
- Do not leave the spillage site unattended
- If spillage is likely to enter a waterway contact the local authority

**ACTIONS**

Phone 111 to alert all emergency services –advise them of the product that is leaking and evacuate people from the area.
If possible isolate the source of the spill.
If possible move your vehicle to a place away from ignition risk and clear of any drains.
Ensure all sources of ignition are removed from the proximity.
Ensure all personnel dealing with the spill are clothed as directed by the appropriate handling requirements.
Refer to the Safety Data Sheet for the fuel handling details applicable – *Ensure the Safety Data Sheet is the one applicable to that type of fuel.*
Utilise spill kit to control the spread of the spill.
Ensure all roadways are clear so the emergency services can reach the scene quickly and safely.
Dispose of any waste safely as set out in the Safety Data Sheet.
If necessary advise the local Council of the spillage and details of the clean up process.

…Fuel fire

Precautions

- Do not endanger yourself.
- Do not put water on petrol or electrical fires.
- Do not leave the fire site unattended if there is a risk of a further outbreak.

**ACTIONS**

Phone 111 to alert all emergency services then evacuate people from the area.
If a small fire, use a fire extinguisher if it is safe to do so to attempt to contain or extinguish the fire.
If a large fire, do not attempt to extinguish the fire retreat to a safe distance.
If possible isolate the source of the fire.
Ensure all roadways are clear so the fire appliances can reach the scene quickly and safely.

⇒ **REFER OVERLEAF FOR MORE DETAIL**

**SIX STEPS TO EMERGENCY RESPONSE**

The following are recommended steps to take when dealing with a dangerous goods emergency situation:

**1. Raise the alarm**

Always advise someone else before attempting to control an emergency. Help will arrive sooner and you will not be on your own should you get into difficulties.

**2. Secure the area**

Establish a hazard zone that will keep non-emergency response personnel and vehicles well out of danger. It may be necessary to patrol the zone to keep onlookers at a safe distance, both for their own safety and to allow emergency personnel to operate without obstruction. Notify emergency services and the local/regional council.

**3. Approach with care**

Do not rush blindly ahead as this could add your name to the list of casualties. Approach from upwind to keep from coming in contact with vapours. Keep in mind that many vapours and gases are odourless, colourless and heavier than air and hence may accumulate in low lying areas, particularly when there is no wind.

**4. Identify products**

Determine the types of hazards posed by the load from the Placards and Class labels on storages, vehicles, freight containers and packages, so that prudent precautions can be taken. Then, examine the available documents to identify the actual products. Always assume that the most hazardous materials in the load or store are involved in the incident so that precautions taken ensure the safety of all involved.

**5. Assess the situation**

Consider each of the following:

- Is there a fire?
- Is there a spill or leak? How large is it?
- Is containment necessary?
- What are the weather conditions?
- What is the terrain like?
- What is at risk – people, property or the environment?
- How significant is the risk – based on the situation, the hazards of the products (from Classes and Subsidiary Risks) and their degree of danger (based on Packing Groups).
- Is public protection necessary? Protect in place or evacuate?
- What resources (human and equipment) are required and are readily available?
- What can be done right away?

**6. Respond**

Respond in an appropriate manner. Establish a command post and lines of communication. Rescue casualties where possible and evacuate if necessary. Maintain control of the site. Continually reassess the situation and modify the response accordingly. The first duty is to ensure the safety of all people in the immediate area including your own. Always seek and utilize expert advice, specialized equipment and technical know-how.

MotorSport NZ recommends to all involved with the transportation, storage and / or handling of motorsport fuel that they obtain a copy of the Code of Practise –Fuel Handling. This Code of Practice is available to download on www.motorsport.org.nz or by contacting MotorSport New Zealand Inc at
P O Box 3793
Wellington
Phone 04 801 9559