Hypoxic Death & the Exit Bag

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Introduction

The plastic Exit Bag provides people with the means to obtain a simple, effective, peaceful and entirely lawful death. While Exit research has found that relatively few people would *prefer* to use a Plastic Bag over the simple ingestion of a Peaceful Pill, it remains one of the most accessible methods available.

There is much misinformation, however, about how a plastic Exit Bag works and why it is so effective. The common assumption is that the bag causes death by 'suffocation.' This is not the case.

Suffocation occurs when a person cannot easily take a breath. Examples of suffocation include tying a rope around the neck, or pushing a pillow into one's face. The act of mechanically blocking one's breathing is *terrifying*, and people will struggle with the last of their strength to clear the obstruction.

When used properly, the plastic Exit Bag brings about a peaceful death; there is no obstruction. The death comes from (freely) breathing in an atmosphere where there is no oxygen (*hypoxia*). With an Exit Bag, a person breathes easily and peacefully; and the bag expands and contracts with each breath. The bag is not next to, or touching the face or mouth. This is in stark contrast to suffocation. This is why it is important *not to confuse* a peaceful hypoxic death that is possible when an Exit bag is used properly, with the grim death that results from an obstruction to the airways.

And this is why we should be wary of media reports that reinforce this confusion. For example, when referring in 2001 to the importation of Canadian Exit bags, Rupert Murdoch's News Limited (*The Australian* newspaper) reported these bags as 'reminiscent of the Khmer Rouge's shopping bag executions of Cambodia's killing fields.' Such reports show a total lack of understanding of the process and have damaged the image of the Exit Bag.

The Hypoxic Death

Hypoxia is a term meaning 'low oxygen'. A death that results from inhaling insufficient oxygen is a hypoxic death. While there are several ways that this might occur, the common method used by those seeking a peaceful death is to suddenly immerse oneself in a non-oxygen environment.

The simplest way to achieve this is by filling a plastic bag with an inert gas and then to quickly place this bag over one's head. To understand why the plastic Exit bag provides an easy and reliable way to die, a basic understanding of human physiology is helpful.

In normal everyday life, we live in an atmosphere that is 21% oxygen. Interestingly, when there is a decline in the level of oxygen in the air we are breathing, we do not experience alarm or concern. As long as one can breathe easily, the sensation one experiences as the oxygen level drops is that of disorientation, confusion, lack of coordination and eventual loss of consciousness.

This experience is sometimes likened to being drunk (alcohol intoxication). When the oxygen level becomes too low, death will result. Accidental hypoxic deaths are not uncommon and there is a number of scenarios that can bring them about. One example is the sudden drop in oxygen level that occurs when an aeroplane depressurizes at high altitude. This can lead to a rapid loss of consciousness and the death of all those on board.

When the plane de-pressurizes, passengers still breath easily. The problem is that there will be little oxygen in the inhaled air. This lack of oxygen will cause a sudden drop in the dissolved oxygen in the blood reaching the brain. This will lead to loss of consciousness and death.

It is not uncommon for planes that have suddenly de-pressurized to travel on autopilot until they run out of fuel, well after everyone aboard has died. Witnesses (from planes sent to investigate) say that it often appears as though everyone on board has just gone to sleep.

Pneumonia is a more common cause of a hypoxic death. Its peaceful reputation has led to its common description as the 'old person's friend'. While the air inhaled may contain the full 21% of oxygen, the inflammation of the lungs (caused by the pneumonic infection) makes it impossible for the necessary oxygen to be extracted. The blood reaching the brain will have less oxygen than that required for life, and a peaceful death often results.

The presence of an inert gas like Nitrogen or Helium in the Exit Bag will dramatically speed the hypoxic process. When a person exhales fully, pulls down the Exit bag that is pre-filled with Nitrogen and then takes a deep breath, the person's lungs will be filled with a gas in which there is very little oxygen.

Fig : 400 litre 'Max Dog' Nitrogen cylinder

This means that blood passing the lungs on the way to the brain will find no oxygen available. When blood with a low oxygen level reaches the brain, consciousness is rapidly lost within one or two breaths. It is the lack of oxygen in the inhaled gas that causes death (not the gas itself).

For the process to work, it is important that the air in the lungs (with 21% Oxygen) is quickly and fully replaced with the inert gas. For hypoxia to occur, the person empties their lungs of air (big breath out). They then replace this with a deep full inhalation of a gas such as nitrogen (which contains 0% oxygen). With good lung function (and practice) this can be achieved with a single exhale/ inhale cycle. A problem associated with using this method, however, is that lung disease (or poor technique) can prevent a full exchange of gas. If a person has lung disease and is concerned about the use of this method, it is advised that they undergo a test to measure their lung function (spirometry). A lung function test gives an indication of whether this strategy is appropriate for them. (See the section on spirometry screening, later in his Chapter.)

It is important to note that the inert gas, itself, does not interact with the body. Nitrogen, argon or helium all have no taste or smell. All quickly dissipate after death. While helium can be detected at autopsy, there is no test that can reveal the use of a nitrogen-filled Exit bag. This makes nitrogen particularly useful for those who don't wish their cause of death to be established. (Of course, this presupposes that the equipment will be removed before the body is 'discovered'. In some jurisdictions this will be an offence so check your local laws if you think this is a strategy of interest).

The Role of Carbon Dioxide (CO_2)

In normal respiration, the human body uses oxygen and produces carbon dioxide as waste. Carbon dioxide is removed from the body when we exhale. While the human body is relatively insensitive to falling levels of oxygen, it is *very* sensitive to any rise in the level of carbon dioxide.

When the body detects an increase of carbon dioxide, a warning message from the brain alerts us. The person will be roused and reacts by gasping and experiences "air hunger". If the person is using a plastic Exit bag, any rise in the level of carbon dioxide within the bag may result in the person pulling the bag from their head in panic. This reaction is known as a Hypercapnic (high carbon dioxide) Alarm Response.

Hyperventilating to Minimise the Alarm Response

To minimise the chance of experiencing panic and air hunger, it is recommended that before pulling down the bag, one spends a short time (1-2 mins) hyperventilating, ie inhaling and exhaling air into the lungs fully at an increased frequency. Put simply, deep breaths in and out quickly. This hyperventilating has the effect of pre-lowering the CO_2 level in the blood, and greatly reduces any likelihood of an alarm response when the bag is pulled down.

Aesthetic and Other Concerns

The image of a bag tied tightly around one's neck has turned many off the plastic Exit Bag approach. Even at Exit International workshops, it is common for those in the audience to voice their disgust at the Exit Bag, saying 'I don't like the thought of being found like that.' Retired French academic, Lisette Nigot, spoke openly of her dislike for the method. In the film, *Mademoiselle and the Doctor* (discussed earlier), Lisette likened the plastic Exit Bag to being 'wrapped like a piece of ham.' For many readers, the main concern will be one of aesthetics. Despite such concerns, if used correctly, the Exit Bag provides a simple, reliable and peaceful end of life option.

A Peaceful Death using Inert Gas

Whereas once it was advocated that an Exit bag could be used with sleeping pills, this approach is now firmly discarded. The best method of using an Exit Bag, by far, involves the use of an inert gas such as Nitrogen, Helium or Argon.

The use of an inert gas is advocated because of its ability to create a space that is devoid of oxygen. It is the space created by the inflated bag that makes a peaceful death from hypoxia (lack of oxygen) possible. A person using an Exit Bag will only have the bag over their head for a matter of seconds until unconsciousness occurs. With prior hyperventilation and a steady flow of inert gas to flush away any exhaled CO_2, there is no risk of a person reacting badly.

Let us explain. The flow of gas into the Exit Bag displaces residual or exhaled oxygen. A person does not need to wait for the residual oxygen inside the bag to be used. Rather, by allowing a steady flow of the inert gas into the bag, there will

be no oxygen from the first instant. The flow of the inert gas into the bag has the second purpose of flushing away any exhaled carbon dioxide. As it is the build-up of carbon dioxide that panic reaction, this risk is also eliminated.

Note: To recap, there is *nothing* special about the inert gas used in terms of whether it is Nitrogen, Helium, Argon or others. Indeed, any gas that does not react with the body and that is odorless and available in a compressed form, would be suitable. Most often the choice is determined by what is available.

Most compressed gases are only available in high pressure cylinders which are leased from commercial gas supply companies (such as BOC or Air Liquide). The drawback with accessing a compressed gas in this way is the paper trail that it generates. There is no anonymity. An additional deterrent is that the commercial compressed gas cylinders are often large, heavy and difficult to transport. Suspicion might arise if an elderly or very sick person is seen leasing a cylinder from their local gas outlet. There is an added complication in that if a friend were to collect the cylinder for them, this other person may become legally implicated in assisting in the suicide. These issues are disincentives to using commercial, high-pressure, compressed inert gas cylinders.

An exception to the above, is the advent of home brew beer supply companies that have started to market light-weight, portable, high pressure Nitrogen cylinders that can be purchased outright. One such company is Max Dog Brewing (owned by the first author who is also a keen home brewer and craft beer aficionado). Max Dog cylinders are made of steel or aluminium (depending on the country of purchase) and come complete with a custom flow regulator. Their shelf life is indefinite and they can be refilled if required.

Low pressure disposable cylinders of Helium and Argon are also available and can be used effectively with the Exit Bag. It is the availability of inert gases in easy-to-acquire, purchase-outright, take-home cylinders that has seen the Exit Bag strategy of renewed interest. In places such as North America, Europe, Australia and New Zealand, Helium is a second gas available in disposable take-home cylinders. Known as 'Balloon Time' kits, these cylinders are used to fill balloons with helium so that they float up to the ceiling for birthday parties and so on (Fig shows a range of available sizes).

The Optimal Gas Flow Rate

A peaceful hypoxic death with an inert gas and an Exit Bag, depends upon an optimal gas flow. The optimal flow will be sufficient to flush away exhaled carbon dioxide so that the gas does not accumulate within the bag. An optimal gas flow will also prevent the bag from becoming uncomfortable, yet is slow enough so that the flow continues for > 20 minutes.

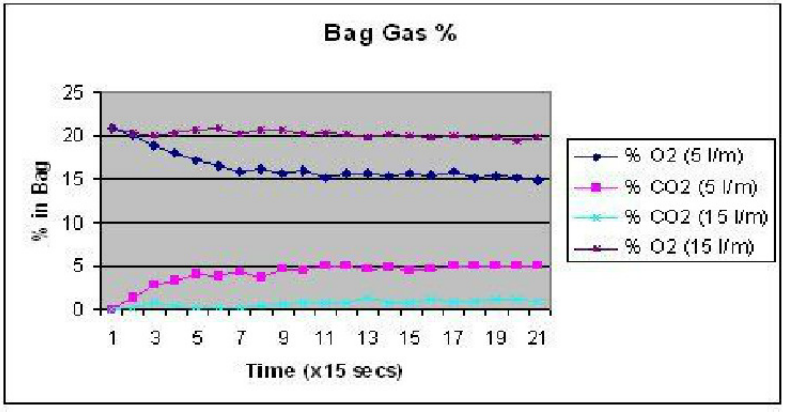

Fig: Exit Bag CO_2 & O_2 concentration lvels for the first 5 minutes

To determine the optimal flow, Exit has carried out experiments where different flow rates of air were admitted to a bag over a test subject's head. The level of carbon dioxide within the bag was monitored using an RKI sampling gas detector.

The results for an 80 kg male taken over a 5 minute period for two gas flow rates (5 & 15 liters/ min) are shown in Fig.

For 15 liters/ min gas flow the level of carbon dioxide in the bag does not rise appreciably over the 5 minute period. With the low flow rate, the level of carbon dioxide approached 5%. This was enough to make the subject uncomfortable and alarmed. A flow rate of ~15 liters/ min was seen as optimal.

NOTE: This test using air supplied to an Exit Bag over estimates the gas flow needed to remove the carbon dioxide.. Where the gas supply to the bag has no oxygen, dioxide production will be less and a gas flow < 15 liter/minute will suffice..

For Max Dog Nitrogen cylinders, the click-flow regulator can be set to 15 liters/ min. The gas will flow at this rate until the cylinder's contents are exhausted (~400/15 or ~25 minutes, more than enough for a reliable and peaceful death).

For Balloon Time (or other similarly branded) cylinders which do not ship with suitable flow control regulators, it is difficult to control the flow of gas. The nylon tap provided with the cylinder is not designed to allow a slow, consistent gas flow rate. For use with an Exit bag, Exit recommends that the nylon fitting be discarded and replaced with a custom brass jet flow control fitting.

Exit manufacture of these fittings was discontinued in 2018 as helium use declined in favour of nitrogen as the preferred inert gas to end life. For details: <*contact@exiinternational.net*>

The Gas Source (Nitrogen or Helium)

1. Nitrogen & the Max Dog Brewing Delivery System

Nitrogen is a very common gas, making up ~ 80% of the air we breath. The gas is cheap, in no danger of running out, and readily available. Nitrogen is not restricted and no questions are asked about why one would want a source of this gas. Indeed, home brewers use the gas in beer dispensing systems, when they want to achieve the fine bubbles and a creamy head similar to Guinness stout (Nitrogen is used to aerate Guinness stout).

Since 2012, cylinders filled with nitrogen have been available from Max Dog Brewing. These high pressure cylinders contain ~400 liters of nitrogen, and can be refilled.

Regulating the Flow of Nitrogen

Max Dog Brewing nitrogen cylinders ship with a custom flow control regulator (see Fig). These regulators incorporate a pressure gauge which indicates the pressure in the cylinder. They use a click setting to adjust the flow rate. The optimum flow rate for a peaceful death (15 liters/ min). The delivery hose that takes the nitrogen from the cylinder to the Exit Bag fits directly on to the regulator outlet.

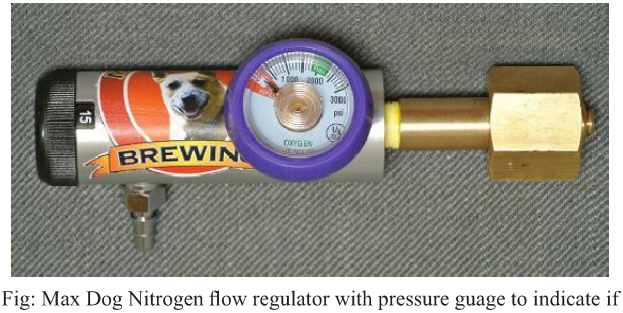

Fig: Max Dog Nitrogen flow regulator with pressure guage to indicate if the cylinder is full and the click-flow setting (shown set to 15 litres/min)

The Max Dog Brewing Beer Nitrogen System

Max Dog is an international retailer of Nitrogen based in Cairns, Australia. The Max Dog Brewing beer nitrogen system varies slightly between country but generally consists of a 2.8 litre alloy or steel cylinder filled to a pressure of 135 bar (2000 psi) (See Fig).

The cylinders weigh ~3 Kg (~7 lb) and full they contain 400 liters of nitrogen. A full cylinder will provide 25 minutes of constant gas flow into the Exit bag, if the gas is delivered at the optimum 15 liters/ min. This is more than enough for a peaceful death. For details see Fig, or visit:
http://www.maxdogbrewing.com

One useful aspect of the MDB nitrogen system is the fact that the cylinders can be topped up if there is leakage of nitrogen over time, or completely refilled (unlike disposable Helium and Argon cylinders). Note: To determine if a cylinder is full, the pressure should be measured. The regulator provided incorporates the pressure gauge required.

Max Dog in the USA

In the US, MDB provides a unique American Kit consisting of an adjustable flow, soft-nose regulator, pressure gauge and connecting hose. They are fitted with to US standard CGA 580

Full steel cylinders containing 500 liters of nitrogen (0916-0145) can be ordered separately and can be delivered to your door from CyberWeld (Fig).

See: *http://store.cyberweld.com/shielgascyl22.html*

Fig:

1. Australian Max Dog Brewing cylinder

2. American CyberWeld Nitrogen cylinder

3. German Gase-Dopp Stickstoff cylinder

Maxx Hund Stickstoff in Germany (and other EU countries)

In Germany, MDB provides a unique EU Kit consisting of an adjustable flow, regulator, pressure gauge and connecting hose. The regulator comes with the appropriate German DIN 477 fitting and convenient full steel cylinders can be mail ordered from Gase-Dopp and delivered anywhere in Europe.

Note: The German cylinder weighs 4.8 Kgm full, and has gas at a higher pressure (200 Bar/ 2900 psi), so the 2 litre cylinder contains 400 litre of compressed nitrogen/ Stickstoff which gives a flow time of ~30 minutes (at the optimum 15 liters/ minute). The Maxx Hund regulator accommodates the higher pressure.

http://shop.gase-dopp.de/Stickstoff-28-2-Liter-Flasche-neu-gefuellt

Max Dog Nitrogen in the UK

While Gase-Dopp will deliver into the UK, an alternative is Adams Gas in Margate who will deliver full 2 liter cylinders of nitrogen to UK addresses.

http://www.adamsgas.co.uk/product-category/nitrogen/

Another source is Hobbyweld, but note the smallest cylinder offered is 9 liters - much bigger than required, and the cylinders need to be picked up from one of their distributors

https://www.hobbyweld.co.uk/products/nitrogen/

UK cylinders have the BS 341 No. 3 fitting which is compatible with the Max Dog (UK) regulator kit

2. Helium

Balloon Time kits from Worthington in Ohio have long been available around the world as a cheap, disposable source of Helium gas for party balloons. There have been two sizes: small (250 liters) and large (420 liters).

In Nth America, Balloon Time canisters are available from Amazon. *http://amzn.to/1350XZi*

In Australia and New Zealand, Balloon Time cylinders have been available at Spotlight stores.

In the UK, Balloon Time (and its equivalents) have been available on websites such as Argos and Tescos.
See: *http://bit.ly/1dkq8B9 or http://bit.ly/1FB9KZb*

These kits are designed to provide an instant system to fill helium party balloons. Most cylinders ship with a packet of party balloons (30 or 50 depending upon the size cylinder) and ribbon tie. The kits are purchased outright, leaving no paper trail

Fig Balloon Time Disposable Helium Cylinders
Large size (420 litres)

Gas Purity

For a peaceful and quick hypoxic death, it is essential that there be no oxygen in the gas being breathed. It is the sudden reduction in oxygen level (from the 21% in air) to effectively 0% within the confines of the Exit bag, that results in the immediate loss of consciousness (LOC) and subsequent death. If the supplied gas (nitrogen or helium) has any oxygen present the method may fail.

Authorities have argued that as an anti-suicide safety precaution, helium gas marketed for inflating party balloons should be mixed with oxygen. This mixed gas could still enable balloons to float, but be useless as a hypoxic death gas source.

In April 2015, the largest manufacturer of disposable helium cylinders, Worthingtons, announced that their disposable helium cylinders may now contain up to 20% air (ie. up to 4% oxygen). This gas should NOT BE USED by those wishing to end their lives by hypoxia.

NOTE: Since the common uses of compressed nitrogen (eg brewing, food preservation) depend on an absence of oxygen, the issue of gas adulteration does not arise.

Testing gas purity

1. Obtain an accurate oxygen sensor eg the Detector CY-12C Oxygen Analyzer, cost ~US$100 - click HERE (see Fig 5.8)
2. Calibrate the sensor by setting the gauge to 21% in air
3. Attach the flow regulator jet to the gas cylinder and connect the hose to run a steady flow (eg 1 lire/ min) of gas into the filtered input of the gauge. (See Fig).
4. Let the gas flow until a steady reading is obtained on the most sensitive gauge setting.

The [O2} reading should be < 2% if the gas is to be used.

At the end of the test, check the cylinder pressure to ensure that there is still an adequate supply left for a hypoxic death.

NOTE: The issue of oxygen contamination does not affect Max Dog Brewing Nitrogen cylinders because they contain 100% nitrogen.

Fig: Meter used to detect oxygen contamination

Gas Flow Control

No matter which inert gas is used, a flow rate of ~ 15 l/min is needed to prevent the accumulation of CO_2 in the Exit Bag. Suggested methods to controlling the gas flow include:

- For high pressure cylinders of nitrogen (Max Dog or equivalent) or helium, regulation is essential. Flow regulators are provided with the Max Dog system or can be purchased from gas providers. The Max Dog regulator gives the pressure of nitrogen in the cylinder, and allows the output flow rate to be set at 15 liters/ min. Using this regulator, flow rate is constant throughout the hypoxic death.

- For 'Balloon Time' and similar helium cylinders at pressures of 1.7 MPa, Exit suggests the use of a gas flow control fitting designed for this purpose

Note: Exit discontinued manufacture of these fittings in 2018, but construction details are available on application to Exit <*contact@exitinternational.net*>

Fig: Exit Helium flow control fitting (discontinued 2018)

Ensuring a Cylinder is Full

When using a cylinder of compressed gas, it is important to establish that there is sufficient gas available for a peaceful hypoxic death. For compressed gas in cylinders, the easiest way of ensuring this is to measure the pressure. This is particularly important for cylinders that have been kept in storage for long periods.

If using the Max Dog Brewing nitrogen system, the pressure will be shown by the gauge on the regulator supplied. To measure the pressure, turn the regulator flow rate to 0 liters/min and open the cylinder to read the pressure. This should be ~12 MPa (1750 psi) (see Fig).

For Balloon Time and similar helium cylinders, the Exit pressure gauge that fits the flow control makes testing the pressure simple. A full cylinder should have a pressure of ~ 1.7 MPa (250 psi). Some of these cylinders have been found to have faulty taps and to be near empty on purchase, so take care!

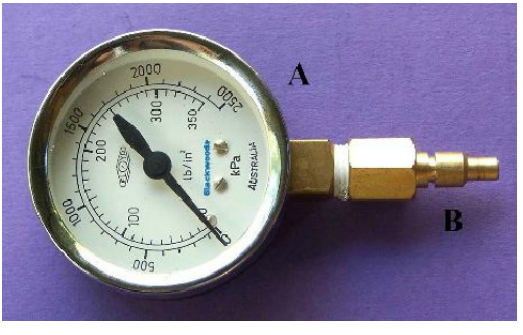

Fig Pressure gauge used to check if gas cylinder is full

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Fig:

(a) Checking the pressure of a full Max Dog nitrogen cylinder. Flow 0 l/min, Pressure 13MPa

(b) Helium cylinder with pressure gauge attached to flow control assembly. Full pressure 250psi or 1.7MPa

The Exit Bag

The Exit plastic bag is the bag which is filled with the inert gas. The bag is designed to enable simple filling with no contamination with oxygen, providing a straight forward way for one to suddenly immerse oneself in inert gas.

1. Making an Exit Bag

While different people make slightly different bags, the standard Exit Bag involves a plastic bag of:

- a reasonable size
- a suitable soft plastic
- a neck band of elastic that allows the bag to make a snug, but not tight, fit around a person's neck

The method used by Nurse Betty is shown in the video on the previous page. A second method is shown in the tab above. Either way, a reliable and effective bag can be assembled in a few minutes. The components are:

- Plastic bag - PVC 35cm x 50cm x 50 micron PVC is a good size. Or a large polyester 'oven bag' see 'A & B'
- 1 metre of 10 mm wide elastic, 'D'
- 1 toggle (or other fastener) to adjust elastic length
- 1 roll of 20mm sticky tape 'C' (Micropore or equivalent)
- 1 small roll of ~ 35 mm plastic duct tape
- Pair of sharp scissors

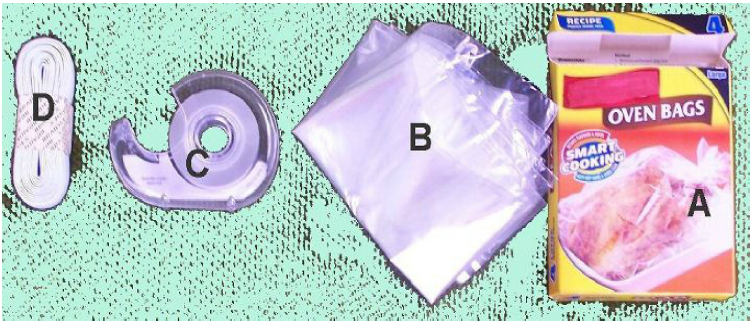
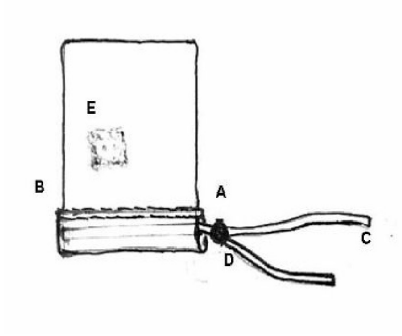


Fig: Items used to construct an Exit Bag

Construction (See Fig & *Do it with Betty* video)

1. Lay the bag out on a flat surface and folded back ~ 25mm (1") around the open end (A-B)
2. Make a 25mm cut in the folded plastic
3. Lay the elastic (C) inside the fold and have the two ends exit through this cut
4. Tape completely along the folded edge of the plastic with the sticky tape
5. Place a cut in a ~ 60mm piece of duct tape and fold this over the exiting elastic to strengthen this part of the bag
6. Thread a small wire tie through two cuts in another piece (~50mm) of duct tape and stick this to the inside of the bag ~ 15cm up from the elastic (E). This can be used to secure the plastic helium hose inside the bag.
7. The toggle (D) (or other fastener) is then threaded onto the two ends of the elastic to complete the bag (Fig)



To download detailed instructions on making your Exit Bag Click HERE

Fig: Exit Bag Manufacture

Fig: The completed Exit Bag

Fig: Positioning, inflating & Using the Exit Bag with Nitrogen

After the Death - The Affect of Inert Gas on the Body

The use of an inert gas with an Exit Bag produces *no* changes in the body that can be seen or found on initial inspection. However, in 2007 forensic laboratory tests were developed to establish the presence of gases like Helium, Argon and Neon in the lungs of the deceased.

In 2009, the first report of the use of these tests to determine the cause of death of an Exit member was noted. Such testing at autopsy is becoming more common. Helium and Argon can both be detected showing the death is not 'natural'.

If, however, Nitrogen is used for a hypoxic death, and if the Exit bag and tube is removed, autopsy findings will be recorded as 'inconclusive'. The Exit Bag with nitrogen is the only totally undetectable method of a peaceful and dignified death, even when sophisticated testing at autopsy is carried out. However, in some jurisdictions, the taking-away of the equipment may constitute an offence such as 'interfering with a corpse' or 'interfering with the circumstances of a death.' Caution and legal advice should be sought before acting in this regard.

The use of Lung Function Screening (Spirometry) for those with respiratory disease

For a peaceful death one must be able to fully exhale and inhale. This allows the rapid exchange of the air in the lungs with the gas in the bag. Some respiratory disease can make this difficult or impossible. The question is, when is lung disease so severe that an alternative method should be used.

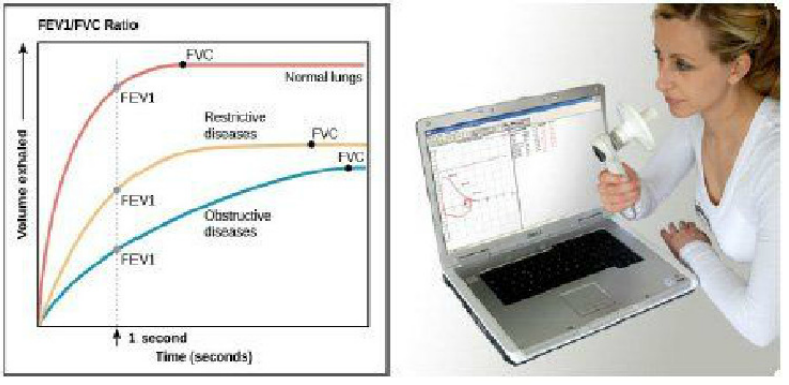


Fig: Spirometry to assess lung function before using an Exit Bag

Lung disease is usually broken into two main classifications: 'Restrictive' disease where there is difficulty filling the lungs with air, and 'Obstructive' disease where there is difficulty emptying the lungs. Emphysema, bronchitis and asthma are all examples of obstructive respiratory disease. Pulmonary fibrosis, sarcoid, or conditions such as scoliosis or obesity or diseases such as motor neurone disease can all cause a restrictive pattern.

For the hypoxic method to work well and bring about a quick, and reliable death, you need to be able to fully exhale (leaving little residual air in the lungs ie not have significant obstructive disease), then fully inhale filling the lungs with nitrogen (ie not have significant restrictive disease). Spirometry offers a quick effective screening test to ensure the suitabilty the method.

The test involves inhaling fully, then fully exhaling hard and fast through the mouthpiece while the machine measures the volume and rate of gas flow. The spirometer then compares results with those expected for a normal person of the same weight, sex and height.
The presence of significant restrictive OR obstructive respiratory disease will reduce the chance of a quick loss of consciousness and peaceful death.

The result is that the lungs now have significant residual oxygen and there is not the sudden drop in the oxygen level in the blood travelling to the brain that causes the rapid loss of consciousness. If one persists, taking more breaths of pure nitrogen from the bag, the residual oxygen in the lungs will eventually drop and cause loss of consciousness, but this can take some time, and can lead to anxiety, panic and failure.

To eliminate the possibility of such failure, ask your doctor for a spirometry test to measure your lung function. If the measurements differ significantly from normal this method of obtaining a peaceful death is not the most suitable for you.

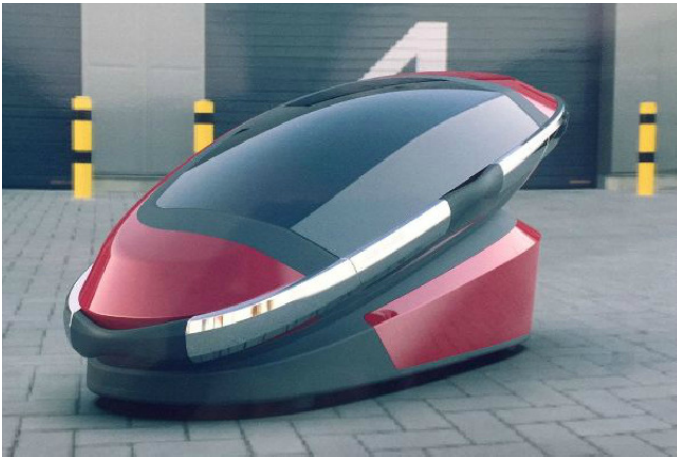
Note: Some restrictive lung disease can be improved significantly with the use of certain drugs. The best example is asthma, where the inhalation of salbutamol (ventolon) prior to the test can sometimes restore values to near normal. If this is the case, the hypoxic method need not be abandoned, but salbutamol should be used immediately before inhaling the nitrogen to die.

Using liquid nitrogen for a peaceful death - *The Sarco*

Concept

The concept of a capsule that could produce a rapid decrease in oxygen level, and maintain a low CO_2 level, the conditions for a peaceful, even euphoric death, led to Sarco development. The elegant design was to create a sense of circumstance, of travel to a 'new destination', and dispel the 'yuk' factor, the common revulsion associated with plastic bag use.

The other design consideration was to devise a system that requires no specialised skills or involvement. No sourcing of difficult to obtain drugs, and no need for medical involvement eg with the insertion of an intravenous cannula. Activation and the achievement of a reliable and peaceful death can also be carried out by those with significant disability. Activation by eye movement or voice control is possible. The goal is to simplify DIY suicide, removing the need for any assistance, and thus making the use of Sarco a legal process even in jurisdictions where suicide 'assistance' is a crime.



Using liquid nitrogen (LN2)

To fill a volume much larger than a plastic bag quickly enough to induce a rapid loss of consciousness, compressed gas was not an option. Too bulky, and on rapid release needed, far too noisy. Liquid nitrogen offers a very effective alternative. The Sarco uses just over 4 litres of LN2 and on activation silently drops the capsule oxygen level to less than 5% in under a minute. Loss of consciousness on deep inspiration and death within a few minutes.

The base and capsule are in two parts. The capsule is biodegradable and can be used as a coffin. The base containing the liquid nitrogen evaporator can be reused.

Access to the Sarco requires the successful completion of an on-line medical capacity test (still in development). This provides a four digit access code valid for 24 hours. On entry, activation is by touch screen with a positive response to: If you wish to die, press this button. A fracture panel is provided in the canopy for any last minute reversal of decision.

Manufacture & Distribution

To facilitate distribution, Sarco is designed to be 3D printed. At present only a 1:7 (accurate) 3D printed model exists. A full scale working model is under construction. This will be used for display, and testing programming for the 3D printed version in 2018. The Sarco will be made open source and placed on the internet. Costs will be in 3D printing only, and obtaining the LN2.

Sarco Launch

Sarco was launched in Toronto, Oct 2017 by Philip Nitschke and design engineer Alex Bannink at the Exit NuTech Conference '*New Technologies for a Peaceful DIY Death*'.
See: *https://youtu.be/DqcmueHrTmw*

Frequently Asked Questions

Confusing notation when describing gas cylinders

The size of a compressed gas cylinder is sometimes its physical volume (ie how much water would it hold if filled), and sometimes the volume of compressed gas it can hold.

Typical cylinders of nitrogen for a peaceful death are small (2 liter) and hold ~400 liters of gas at pressure. These are sometimes referred to as ***either*** 2 liter ***or*** 400 liter cylinders!
Pressures units used are Bar (bar) or Megapascal (MPa) or psi (pounds/square inch): 1 bar = 0.1 MPa = 14 psi

Is it necessary to have more than one cylinder to ensure sufficient gas is available?

No. Using the Max Dog nitrogen system, the flow control regulator ensures that a full cylinder will provide gas at 15 litres/min for >20 min - more than enough for a peaceful death.

Using a Balloon Time helium cylinder or similar and the Exit flow control fitting, even the smaller (250 litre) cylinder will provide sufficient gas for enough time (Fig 5.2). However, if the tube is to be connected directly to the Balloon Time cylinder with no gas flow regulation (other than the cylinder on/off tap), multiple cylinders should be employed.

Can a face-mask be used instead of the Exit Bag?

Common, inexpensive face masks are often used to deliver oxygen to patients. They are usually held in place by elastic which covers the nose and mouth with oxygen delivered through a plastic tube attached to the base of the mask. There is no attempt to seal the mask and face. Masks that seal preventing entry of external air are more complex, difficult to fit, and prone to leakage (eg a seal is difficult with a beard). CPAP devices used for sleep apnea are of this type.

The Exit Bag produces rapid loss of consciousness by ensuring that NO oxygen is inhaled. To achieve this using a mask a perfect seal would need to be maintained till death. Even with a well fitting sealing mask this is difficult, as the muscles and contours of the face change as consciousness is lost. Attempting a hypoxic death using a sealing mask is risky and NOT recommended.

THE RP TEST SCORE – Hypoxia with Nitrogen

Reliability (R = 8/10)
The method is reliable but technique is important and a degree of coordination and dexterity is required

Peacefulness (P = 7/10)
Considered "peaceful" partly because the loss of consciousness comes quickly.

Availability (A = 4/5)
All components are available

Preparation (Pr = 2/5)
Care needed with assembly and "setting up" of equipment

Undetectability (U = 5/5)
If all equipment is removed detection is rare. If Nitrogen is the gas used the method is totally undetectable.

Speed (Sp = 5/5)
Loss of consciousness comes quickly

Safety (Sa = 5/5)
The method presents no danger to others

Storage (St = 5/5)
Components do not deteriorate with time. Pressure testing can readily establish that the cylinder is full

Total RP Score 41/50 (82%)

THE RP TEST SCORE – Hypoxia with Nitrogen

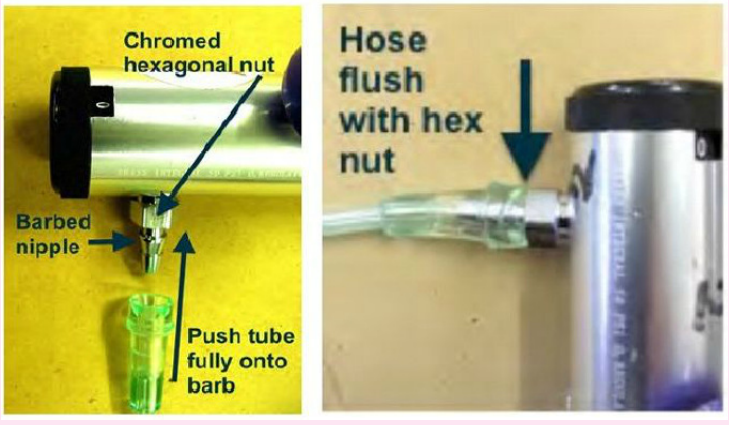
Criteria	Score
Reliability	***8/10***
Peacefulness	***7/10***
Availability	***4/5***
Preparation	***2/5***
Undetectability	***5/5***
Speed	***5/5***
Safety	***5/5***
Storage	***5/5***
Total	***41 (82%)***

Nitrogen Method Summary Supplement

Fig 5.17: MaxDog gas regulator (with plastic dust cap)

Preparation of the Regulator and Tubing

Identify the regulator. The regulator may have a plastic dust cap over the right hand end of the brass fitting. A black click setting with numbers from zero to 25 at the other end sets the gas flow rate (in litres/ sec). Rotate the black knob until it shows 15. This is the required gas flow. During storage, the black knob should be set to zero. (see fig 5.17)



Connecting the hose

Take the oxygen tube (provided in Max Dog kits outside Australia). Note, this is called an 'oxygen tube' but it is perfect also for use with Nitrogen.

Dip one of the ends of the tube into a cup of very hot water. When pliable, shake off the water and push the end on to the barbed nipple of the regulator (see fig 5.18)

Make sure that the end of the tube is pushed all the way on to the barbed nipple so that the end of the plastic fitting is flush with the chrome hexagonal nut.

Test to ensure that the tube is attached securely by pulling on it – it should be virtually impossible to pull it off the barbed nipple. If you have any doubts about the secureness of the hose, or are unable to attach it properly, then remove it. Repeat the heating of the end and push it on to the barbed nipple again, this time more securely.

An alternative gas connection can be made using 1.5m of clear Boston PVC food grade tubing 6mm (¼ inch). This can be bought from a local plumbing supplies store.

An alternative connnection system involes using a small hose clamp. This can be placed over the tube and tightened to ensure that it cannot be dislodged. (fig 5.19).

Note – ensure that it is impossible to pull the hose off the barbed nipple on the regulator.

Fig 5.19: 6mm PVC tubing attached toMaxDog gas regulator

Connecting the Exit Bag to the Cylinder

There are a few first steps before the Exit Bag can be connected to the cylinder. Firstly, the oxygen tube should be taped to the inside of the Exit Bag. This can be done with 'Micropore' tape or 'Leukoflex' tape show in fig 5.20. Both tapes grip well but are also easily removed for repositioning. The recommended width of the tape is one inch (~2.5cm).

Fig 5.20: Adhesive tape to attach tube to Exit bag

Insert the end of the tube into the open end of the bag. Push the tube up inside the bag to the end. Using the tape, place a number of strips over the tube to hold it in position (see fig 5.21). It is easiest to do this with both hands working inside the bag. Ensure the tape is placed over the tube at regular intervals, right up to the tube's open end. This will require approximately eight pieces of tape.

Fig 5.21:Taping gas hose to inside of Exit Bag

Tape the hose to the inside of the mouth of the bag, close to its open end. Use two pieces of tape to fasten the hose at the bag mouth to ensure it will not dislodge.

Ensure the Cylinder is Vertical

It is preferrable for the Nitrogen cylinder to be vertical for use. An effective way to ensure that the cylinder is stable and vertical is to secure it to a solid object. The cylinder could be strapped/ taped to a chair or table leg. See fig 5.22

Fig 5.22:Positionin the nitrogen cylinder

An alternative is to place the cylinder in a market cart (above centre). In order to ensure the cylinder does not flop around inside the trolley, pillows or cushions could be stuffed into the market cart as padding.

Another alternative is to strap the cylinder to a workshop trolley (above left). The uprights of the trolley provide good support. Like the soft canvas market trolley both are moveable which may be convenient in some circumstances.

Attaching the Regulator to the Gas Cylinder

In some countries the cylinder ships with a dust cap. Remove the dust cap from the cylinder. (See fig 5.23, right)

Now look at the regulator. Inspect the small black rubber ‘O’-ring on the regulator for any damage. If damaged the ‘O’ ring should be replace (see fig 5.24a).

Fig 5.24 Atatching the regulator to the cylinder:

To connect the regulator to the cylinder, slide the brass end of the regulator into the outlet on the cylinder (see fig 5.24b). Note this image is looking down on the vertical gas cylinder.

To fasten the regulator to the cylinder, slide the large brass hexagonal nut onto the threaded part of the gas cylinder outlet (see fig 5.24c).

Hold the regulator firmly with one hand and hand-tighten by screwing the hexagonal nut onto the cylinder thread. You do not need a wrench or other tool to fasten the regulator to the cylinder.

If you cannot fasten the regulator tightly to the cylinder by hand, you can use a wrench but do not over-tighten.

The regular should not be loose or easily rotatable on its axis. To change the angle of the display of the screen on the regulator, loosen the hexagonal nut, then rotate the regulator. Complete this process by re-tightening the hexagonal nut (see fig 5.24d).

Turning on the Gas & Checking for Leaks

1. Set the flow control on the regulator to zero.

2. Turn on the tap on the top of the cylinder. The tap turns anti-clockwise. Turn it for 3 or 4 turns.

3. The pressure in the cylinder will show on the regulator gauge. If the cylinder is full, it will be in the green zone.

4. Listen for the sound of any gas leaking and watch the pressure gauge. If there is a leak, the pressure gauge will fall.

5. If the pressure falls, turn the tap fully off in a clockwise direction, and tighten the regulator, if the leak persists replace the 'O' ring.

Checking gas pressure

Checking Gas Cylinder Pressure

Max Dog Nitrogen Cylinders vary slightly between country, but they are generally filled to a pressure 13.7 MPa (2000 psi) and contain ~400 litre (20 cuft) of compressed nitrogen. This provides a reliable flow of gas for around 25 minutes at a flow rate of 15 litres/min. This is more than enough for a peaceful, reliable hypoxic death.

To test the pressure of the cylinder, set the regulator flow setting to zero, then turn on the cylinder tap. The needle on the regulator pressure gauge should move from zero to around 2000 psi. This indicates the cylinder is full (see fig 5.25c).

If the pressure gauge points to the left of the green zone of 2000psi (or is in the red zone indicating zero pressure), the cylinder will need refilling (see fig 5.25d).

Preparing for a Peaceful, Hypoxic Death

There are some diseases that make a hypoxic death using an Exit Bag and an inert gas such as Nitrogen or Helium unsuitable (see section on Lung Function using Spirometry). Remember, this method is very technique dependent. Being able to breath fully out (exhale) is a key component of this technique.

1. Make sure the gas cylinder is stable and ensure that it will not roll over.
2. Ensure the tube will not be dislodged if it is pulled after the person becomes unconscious.
3. The optimum position for a hypoxic death is to be reclining comfortably in an armchair, supported by pillows if necessary. Do <u>not</u> lie down. Finally, ensure that the bag will not be dislodged when consciousness is lost.

Things to Remember

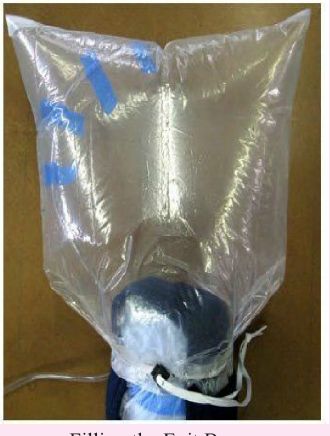
Fig 5.26:Gas flow @ 15l/min

Remember, there is nothing poisonous about a gas such as Helium or Nitrogen. The effectiveness of this method comes from the fact that an oxygen-free environment is being created within the Exit Bag.

1. With the regulator's flow rate set to 15 l/min, (fig 5.26) a full cylinder will provide around 25 minutes of continuous gas flow.
2. The nitrogen displaces the oxygen in the Exit Bag. It is the low oxygen environment that causes death.
3. The Exit Bag should be filled with nitrogen before one exhales and pulls the bag down.
4. Once a deep breath is taken, loss of consciousness is almost immediate and death follows soon after.
5. The Exit Bag is <u>not</u> be tight over a person's head.
6. The elastic collar provides a <u>loose</u> fit around the neck when pulled down.
7. The loose fit allows the Nitrogen to flow continuously from the Exit Bag taking any exhaled carbon dioxide with it.

The Process

1. Place the Exit Bag collar around the head, above the ears and scrumple up the bag so there is no air inside.
2. Set the regulator to 15 l/min (see below).
3. Turn on the gas from the cylinder.
4. Remove glasses or other protruding objects such as hearing aids.
5. Wait until the bag is fully inflated with the collar still sitting above the ears. This will take around two minutes. When full, the Bag should look like a balloon. Use a mirror to check. The nitrogen/ helium will begin escaping under the collar of the Bag (see below).
6. Position oneself in a steady, comfortable position.
7. To proceed, take some rapid, deep breaths (hyperventilate). When ready, exhale completely, grasp the Bag with both hands, one on each side, and pull the bag down over the head.
8. With the Bag fully over the head, take a deep breath.



Filling the Exit Bag

The Exit Bag over the head

Changing Your Mind

Remember, it's always OK to change your mind and this can be done up to the point where consciousness is lost. To put a stop to the process:

1. Release the elastic toggle and pull the bag off your head.
2. Turn the cylinder tap anti-clockwise until it is fully off.
3. When the pressure dial drops to zero, the system is completely closed down and can be disassembled.
4. Undo the brass hexagonal nut on the regulator and disconnect from the cylinder.
5. Put the dust caps (if available) back on the regulator and cylinder.
6. Ensure the cylinder gas tap is fully off.
7. The gas cylinder can then be re-stored (lying down) and the regulator replaced in its box to keep it clean.