

# **The Essential Guide To Safe Winter Driving**



Compiled and Edited By  
Marvin Weinberger



**[www.CenterForSafeDriving.org](http://www.CenterForSafeDriving.org)**  
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# Emergency Phone Numbers

Please complete the Additional Emergency Information  
in the space provided on the inside back cover.

<b><u>Category</u></b>	<b><u>Name</u></b>	<b><u>Phone</u></b>	<b><u>Membership/Policy #</u></b>
Auto Club	_____	_____	_____
Roadside Assist	_____	_____	_____
Car Dealer	_____	_____	_____
Repair Shop	_____	_____	_____
Auto Insurer	_____	_____	_____
Local Police	_____	_____	_____
State Police	_____	_____	_____
Ambulance	_____	_____	_____
Fire Dept.	_____	_____	_____
Hospital	_____	_____	_____
Physician	_____	_____	_____
Medical Insurer	_____	_____	_____
Emerg. Contact	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____

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## ***In The Beginning***

It's coming! Any day now (if it hasn't started already) winter will arrive and demand your attention. You can be blasé about the other seasons, but winter is definitely not a fad for more than 100 million drivers in North America. In fact, during a typical January, fully half of the continental U.S. (as well as all of Canada) experiences temperatures below freezing. If you're planning to do any serious winter driving, what you don't know can land you in a snow bank – or worse!

We're all guilty. Who hasn't, 'on occasion' left the house without completely clearing snow and ice from their vehicles? But facts are our friends, and in this case they don't tell a pretty picture:

- **According to the National Highway Traffic Safety Administration (NHTSA) Traffic Safety Facts 2001 you were 23% more likely to be involved in a vehicle accident during the winter than during the summer months.**
- **During the same reporting period, there were more than 61,000 injuries and 781 deaths resulting from crashes during snow/sleet conditions.**
- **The leading cause of death during winter storms arises from driving mishaps.**

Do you want to avoid becoming a statistic? Yes? Then it's time to repent of your winter driving sins. Do it for yourself and for your loved ones, as well as for the folks in the other car that you might careen into one day. Please take the time now to fill out your Emergency Information in the space provided on the inside front and back covers of this booklet.

**Remember, we're all in this together!**

## ***About the Center For Safe Driving***

The Center for Safe Driving is an information clearinghouse operated as a public service of the Innovation Factory, Inc. The Center provides the following services:

- **The Essential Guide to Safe Winter Driving.** The booklet that you are holding in your hand. Also available for download in Adobe Acrobat format.
- **Safe Driving Legislative Update.** We report on legislative initiatives aimed at improving driving safety. Our initial focus is on 'peephole driving'. This is the common, but dangerous practice of clearing just enough snow and ice from the windshield to provide a mere peephole of visibility. We are the people you see shedding snow and ice from their vehicles. If this makes you mad enough to want to do something about it,



please contact your local legislators, and refer them to the model safe driving laws which we are creating.

- **Model Safe Driving Laws.** The Center provides model legislation to further enhance driving safety.
- **Safe Driving News and Links.** The Center's staff monitors important developments and provide updates as well as links to other useful sites.

Please visit us on the web at [www.CenterForSafeDriving.org](http://www.CenterForSafeDriving.org).

## **Acknowledgements**

Your editor has compiled, synthesized (and tried to restate) what he believes to be the very best guidance on the subject of winter driving safety. I spoke with experts, consulted various texts, and reviewed many of the thousands of sources available online (most of which I found to be duplicative, inaccurate or out-of-date).

But there is always more to learn. So here is a list of some of the best online sources that I came across in my research. Please Google™ over to:

- |   |  |
|---|--|
| ➤ <b>ACR Electronics</b>                                | ➤ <b>National Oceanic and Atmospheric Administration</b> |
| ➤ <b>American Automobile Association (AAA)</b>          | ➤ <b>National Safety Council</b>                         |
| ➤ <b>American Trucking Association</b>                  | ➤ <b>National Search and Rescue Secretariat (Canada)</b> |
| ➤ <b>Automotive Forums</b>                              | ➤ <b>National Weather Service</b>                        |
| ➤ <b>California Department of Transportation</b>        | ➤ <b>Natural Resources Canada</b>                        |
| ➤ <b>Better Business Bureau of Manitoba</b>             | ➤ <b>New Jersey Department of Transportation</b>         |
| ➤ <b>Canada Safety Council</b>                          | ➤ <b>Ontario Ministry of Transportation</b>              |
| ➤ <b>Canadian Automobile Association</b>                | ➤ <b>Outdoor Places</b>                                  |
| ➤ <b>Canadian Driver</b>                                | ➤ <b>Pennsylvania Turnpike</b>                           |
| ➤ <b>Car Talk</b>                                       | ➤ <b>Pennzoil</b>  |
| ➤ <b>CNEWS</b>  | ➤ <b>Risk Evaluation Services</b>                        |
| ➤ <b>Edmunds</b>  | ➤ <b>Spine Universe</b>                                  |
| ➤ <b>Equipped to Survive Foundation</b>                 | ➤ <b>The Cleveland Clinic</b>                            |
| ➤ <b>Federal Communications Commission</b>              | ➤ <b>The Weather Doctor Almanac</b>                      |
| ➤ <b>Federal Emergency Management Administration</b>    | ➤ <b>Tire Rack</b>                                       |
| ➤ <b>Goodyear Tire</b>                                  | ➤ <b>Today's Seniors</b>                                 |
| ➤ <b>How Stuff Works</b>                                | ➤ <b>Transport Canada</b>                                |
| ➤ <b>Massachusetts Institute of Technology</b>          | ➤ <b>Weather Notebook</b>                                |
| ➤ <b>Minnesota Department of Public Safety</b>          | ➤ <b>Wireless News Factor</b>                            |
| ➤ <b>Montana Department of Transportation</b>           | ➤ <b>Wisconsin Department of Transportation</b>          |
| ➤ <b>MSN Autos</b>                                      | ➤ <b>Woman Motorist</b>                                  |
| ➤ <b>National Association of State Fire Marshals</b>    | ➤ <b>Yahoo Health</b>                                    |
| ➤ <b>National Highway Traffic Safety Administration</b> |  |
| ➤ <b>National Institute of Health</b>                   |  |

This was a big undertaking that wouldn't have been possible without the generous help of many individuals. Special thanks to:

- **Tucker Marion**, Chief Development Officer of the Innovation Factory. Tucker devoted long hours to 'sanity checking' my work.
- **Dr. Rosalind Kaplan MD** and **Alan Forstater MD FACEP** for reviewing the discussion of hypothermia, frostbite and other winter health risks.
- **Fran Solow-Weinberger**, my wife of 15 years. Fran, our friends may not understand why you put with me. But I'm sure glad that you do.

**Important Disclaimer**

We believe that the information in this booklet is reasonably accurate and appropriate. But no two drivers are alike, and the specific road and winter weather conditions that you encounter will vary considerably. You must exercise your own judgment, in each circumstance, to determine what guidance to rely upon. Please consult your vehicle's operating manual as the controlling source of advice on the topics discussed below. In addition, the information provided is not intended to replace the medical advice of your doctor or health care provider. Please consult your health care provider for advice about a specific medical condition.

This work has been underwritten by the Innovation Factory, Inc. The Company takes a high tech approach to the serious challenge of driving safety. Our products, which have appeared in The New York Times and Popular Science, include the IceDozer™ and Snowmover™ tools to remove snow and ice. Our newest innovation, the IceDozer Mini™, is shown here. All of the Company's products come with a lifetime guarantee and are proudly made in America. To learn more about the Innovation Factory, please visit us at [www.InnovationFactory.com](http://www.InnovationFactory.com).

**Finally, I have an important request of you, the reader.** Please let me know whether this Guide has been helpful (and, perhaps, even interesting). I warmly welcome your ideas, anecdotes and suggestions – as well as any corrections!

Your Editor,

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## ***Organization of this Guide***

To be prepared is to be forearmed. In this booklet you're going to learn the six essentials to help you achieve your goal of safe winter driving.

- **How to Prepare Your Vehicle for the Season**
- **Tips Before Starting Out on a Wintry Day**
- **Safe Driving Habits for Handling Snow and Ice**
- **A Road Trip Workout to Help Keep You Alert**
- **What to do if You Get Stuck in a Rut**
- **How to Survive if You Break Down during a Winter Storm**

If you are an old pro', please keep an open mind. In researching this publication, I discovered that a lot of the 'gospel' which I learned back in driving school turns out to be something less than the truth which I once believed.

I hope that every word of this Guide will prove helpful. But there's a lot here, and everyone is busy. So I have included a brief recap at the end in order to highlight a few of the 'most essential' bits of advice.

As a wise friend once observed, "If you don't begin, it takes longer!"

**So let's get started!**

If you are reading this pamphlet on the beach just to impress the 'snowbirds', please take that smirk off your face. The rest of us are trying to concentrate ☺



## ***I. Preparing for the Winter***

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### **VEHICLE CHECK-UP**

If you want to avoid an untimely (and potentially life-threatening) breakdown, you need to follow the preventative maintenance recommendations from your vehicle manufacturer. Have a reputable mechanic check out the following. And remember to keep a record in the space provided on the inside back cover of this booklet.



- **Air Conditioner.** Essential to defogging the windshield on cold days, as we'll learn below.
- **Battery and Electrical Systems.** Have the battery tested and cleaned, and make sure there is no corrosion around the cables.

#### **WHY BATTERIES FAIL.**

It's harder for the battery to start the car in the winter because the oil isn't as fluid; while at the same time batteries lose power as the temperature drops. Batteries operate best at around 80° Fahrenheit (27° Celsius). In very cold weather (or if the battery is older) battery output can be diminished to as little as 10 percent. Depending upon quality and usage, the life span of a battery can range from 12 to 48 months (in Canada, the official average life expectancy is 42 months). If in doubt, replace your battery with the most powerful product recommended for your vehicle. Remember, the battery won't give notice before it fails at the moment when you need it most!

- **Belts and Hoses.** In the winter time, these can crack and dry. Keep a close 'ear' on these and be alert to any squealing sounds.
- **Brakes.** Must be faultless and calibrated so that there is no pull to one side which can precipitate a skid.
- **Cooling System.** Flush and protect the radiator and engine. Use a mix of 50/50 water to coolant (this may vary depending on vehicle type, so refer to your owner's manual for the proper ratios). Also check containers, pressure caps, thermostat (and the aforementioned belts and hoses). Remember that cars can overheat in the winter too, and if you run low or out of coolant – you'll have no heat in the passenger compartment.
- **Engine.** If you're due for a tune-up, have it done before the winter sets in.
- **Engine Block Heater and Battery Blanket.** If you live in a place where temperatures really plummet overnight, you should invest in these devices to keep your car toasty. Consider running them from a



timer since it probably will take no more than two hours to warm up the engine block and battery prior to starting the vehicle.

- **Exhaust System.** Carbon Monoxide poisoning can kill you – and usually gives no warning. Check the muffler and tail pipe system for leaks. The risk of Carbon Monoxide poisoning is especially acute when driving with windows closed during cold weather, while idling in traffic or if you are trying to keep warm while stranded in a storm.
- **Fuel System.** Replace fuel and air filters. Always travel with a full tank of gas while driving during the winter.

#### **KEEP THE GAS TANK FULL**

If you find yourself stranded, you'll be glad to have the extra fuel to keep the car running (and the passengers warm). This is 'obviously' important if you are planning a trip to the country. But sudden snowstorms can also strand you for hours on the local expressway. A full tank will also reduce the occurrence of fuel line freeze-up while providing some additional ballast over the rear tires.

- **Heaters and Defroster.** Make sure they are operational; you probably haven't tested them for a few months.
- **Lights.** Including all exterior and interior lighting; also check the aim of the headlights.
- **Oil and Filter.** Change to light or multiweight winter grade oils that are less likely to congeal at low temperatures. Summer weight oils can cause hard starting.
- **Tires.** Should be properly inflated and have plenty of tread. Most tires have tread wear indicator bars molded into the tread face. When your tires have worn down so that you can see a solid bar of rubber across the width of the tread, it is time to replace them. Don't forget to carry a properly inflated spare tire at all times.

#### **WHICH TIRES ARE RIGHT FOR YOU**

This will depend largely on when, where and what you drive. Most drivers only encounter winter road conditions (ice, slush, or hard-packed snow) on a limited basis. If that's the case, good quality all-season tires may serve your needs adequately. However, if you live in an area that regularly receives snow or your interests (such as skiing) require you to drive in winter conditions, then you should consider alternatives. According to the National Safety Council, snow tires perform about 28% better than regular summer tires (with all-season tires falling somewhere in between). Studded snow tires perform 183% better while reinforced tire chains provide fully 630% better traction than summer tires (but check before purchasing, since the use of tire chains may be restricted depending on where you're planning to drive). Whatever you select, remember that good tires don't just help you get going. They help you to steer and (most importantly) to stop!

#### **PROPER TIRE INFLATION**

When it comes right down to it, you're riding on air. In most parts of North America the difference between the average summer and winter temperatures is about 50° Fahrenheit (10° Celsius). This translates into an average loss of 5 pounds of air pressure in your tires, enough to significantly degrade handling and traction on slick surfaces (as well as to sacrifice tire longevity). Check your tires when it gets really cold. Do it in the morning before you drive more than a few miles. Inflate to the recommended pressure (indicated on the side of every tire).

- **Windshield Wipers.** Effective wipers are essential for good visibility. You may want to switch to 'winter' wipers, but remember to switch back after the season, since they are heavy and will eventually wear out the wiper motor. The life of a typical wiper blade is only one year.

#### **CARE AND FEEDING OF WINDSHIELD WIPERS**

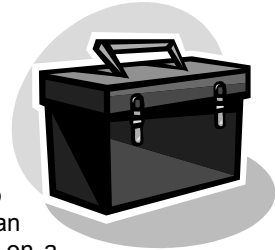
Let's face it; we take windshield wipers for granted – until we need them. Then suddenly, they "streak, smear, chatter and squeal" (everything but clean the window). Your wipers are basically moving squeegees. Their edges have to be sharp, smooth and clean while the rubber has to be flexible enough so that the blade can flip over after wiping from one direction to the next. Ultraviolet radiation, ozone and road salt can degrade the rubber. Dirt will further degrade the flexibility (and can even scratch the windshield). Here are some simple rules to help you extend the longevity of your wiper blades: Don't operate on a dry windshield. Clean the blades with a cloth and some washer fluid at least as often as you wash the car – you'll be amazed at how much dirt and oil comes off the blades (even after you've gone through the car wash). Never use your blades as an ice scraper (because ice is hard and can easily cut the blades) or as a snow plow (since heavy snow will burn out your wiper motor).

- **Windshield.** While it's always a good idea to catch a windshield crack early, it's especially true in cold weather. In winter, your glass cycles from cold to warm each time you heat up your car and shut it down. These dramatic temperature swings cause the glass to expand and contract, accelerating the rate at which small cracks become large – and dangerous.
- **Wiper Fluid.** Avoid the cheap 'blue stuff'. Fill up the reservoir with undiluted solvent, recommended for winter use. You may also want to fortify by adding some pure concentrate. Wiper fluid can flash freeze on a bitterly cold day, when sprayed on your windshield while traveling at highway speeds. Use extra caution.
- **4WD System.** Make sure the system is fully functional and that every person driving the vehicle is familiar with the proper use. Be wary of the overconfidence which often afflicts the drivers of SUV's

and other 4WD vehicles. As we shall discuss, this overconfidence is based on a dangerous misconception.

## **WINTER SURVIVAL KIT**

Do you drive in very cold and snowy conditions? Will you be heading into sparsely populated country? If you answered yes to both questions, then you probably need ALL of the items listed below.



Even if you live in a warm climate, but will be heading up to the mountains to ski, it's definitely better to be safe than sorry. Besides, most of these items will come in handy on a year-round basis. Please remember to keep a record in the space provided on the inside back cover of this booklet.

**Bear in mind that you should be familiar with the proper and safe use of the various tools and materials listed below. Pay attention to any special warnings that might apply – including the need to exercise caution when transporting poisonous and volatile chemicals (such as windshield washer fluid and gas line deicer).**

- **Blanket and Warm Clothes.** Throw in those old blankets (and perhaps even a sleeping bag), enough for everyone in the vehicle. You'll be all set for a picnic come spring. If storage space in your vehicle is at a premium, consider purchasing some inexpensive Mylar blankets that NASA invented – they come wrapped in very small packets.

### **NEVER OUT OF STYLE**

We all have out-of-style winter clothes that we never wear, but would be really glad to have on hand should we get stranded. Throw in those unfashionable hats, gloves, sweaters, heavy socks, earmuffs, scarves, coveralls, boots and a poncho (in case it starts to rain). If you are traveling when or where really severe weather is possible, you'll need to include enough items to allow everyone in the vehicle to survive for up to 24 hours without the benefit of a car heater. Remember, the key to staying warm is to keep dry and dress in layers. And, incidentally, mittens keep your hands warmer than gloves.

- **Cards, games and puzzles.** To pass the time (particularly if you are traveling with kids). Make sure to include extra batteries for CD players (and other personal electronic devices). Consider extra pens, pencils and drawing pads as well as a pack of cards (with instructions for some card games that the kids haven't yet mastered). You can also find pocket-sized versions of popular board games (like chess)

that are specifically intended for road trips. These inexpensive products - featuring magnetized game pieces - are usually sold at highway rest stops.

- **Cell Phone.** Not a luxury anymore. Be sure to keep an auto adaptor charger in the glove compartment. Also, have some spare change on hand just in case you need to use a payphone.
- **Compass and Thermometer.** I keep a miniature set attached to my key chain when traveling to the White Mountains of New Hampshire for cross country skiing.
- **Emergency Gas Carrier.** They now make a single use version that folds up compactly.

#### **CONCENTRATED EMERGENCY FUEL**

Who hasn't worried about running out of gas? This is particularly important during the winter when your life may depend upon the warmth generated by the car engine (while you await rescue). Until recently, carrying emergency fuel meant transporting extra gasoline in an 'approved container' in your trunk. Not something that is generally encouraged given gasoline's propensity to burn and explode. Now there are alternatives in the form of highly refined (concentrated) fuel additives. These products contain some of the properties of gasoline, minus the more volatile components, so they can be stored safely in the trunk for up to 5 years. Emergency fuel typically comes packaged in a half-gallon container (sufficient for most vehicles to travel 8-10 miles). Bear in mind that these concentrates only work if poured into the fuel tank while the engine is still hot.

- **Empty Coffee Can with Lid.** Can be used for heating water and perfect for storing your matches and candles.
- **Extra Windshield Washer Fluid.** Keep a jug or two in the trunk of high-quality, winter strength solution. Don't forget to include a rag so that you can clean off your wiper blades on a regular basis.
- **Fire Extinguisher.** You'll want to select a portable extinguisher with an ABC rating (for all types of fires – including chemical fires). Check the extinguisher at least every six months to make sure that it is still pressurized in accordance with the manufacturer's specifications.

#### **CAR FIRES – AN UNDERREPORTED DANGER**

More than 300,000 vehicle fires are reported each year in the United States. These result in upwards of 300 fatalities. Some experts believe that the true numbers are much higher. Flames aren't the only danger from a car fire. Toxic fumes are produced from burning plastic and synthetic materials (which are being used increasingly to reduce the weight of today's vehicles). Some cars are equipped with a gas shock absorber in the front bumper; or they are built with gas struts (for holding open the car's hood, back windows, etc.). These can become projectiles if fire or intense heat reaches them. Most car fires originate in the engine, but they can also start in the exhaust

system or even the brakes. Fires even result from cigarettes that aren't properly extinguished. The simplest way to prevent a fire is to keep your vehicle consistently maintained – taking special care to check the fluids, valves and plugs before taking any long road trips this winter.

- **First Aid Kit.** Should include any special medications you might need as well as a basic instruction manual. Don't forget aspirin, ibuprofen and any other pain relievers or muscle relaxants that your doctor may recommend. Particularly important if you (or a family member) suffer with back problems.
- **Flat Tire Sealant and Air Pump.** Use sealant only as a last resort. Drive straight to the nearest service station to repair or replace the tire.
- **Food and Water.** A supply of high energy munchies (candy, nuts, raisins, granola bars, sugar cubes) and several bottles of water. Also include dry mixes (soup, coffee, hot chocolate, bouillon cubes, etc.) to mix with hot water in the coffee can. Be mindful of your passengers' requirements as well.

#### **THE PERSONAL ENERGY CRISIS**

If you are stranded during a winter storm, you need to be mindful of conserving two critical energy resources. Which are these? The gasoline in the tank of course comes to mind. As long as you have fuel for the vehicle's engine, you can provide warmth to the passenger compartment (although this should be done sparingly). Be equally mindful of your body's own requirements. By stoking your internal engine with high-energy foods, you dramatically increase your ability to stave off, or recover from, hypothermia. It's equally important to have enough fresh water with you (or the means to melt the snow and warm the resulting liquid to above body temperature). During very cold weather the outside humidity plummets which us why dehydration is a constant risk of winter activities).

- **Gas Line Deicer.** In cold weather, condensation (that turns to ice) can build up quickly in a near-empty fuel tank. Keep water and ice out of the system by maintaining a full tank of gas. Add gasoline antifreeze, sometimes referred to as 'dry gas,' if it gets really cold.
- **Glass Cleaner and Cloth.** Even a new car will quickly pick up a residue of oily grime on the *inside* of the windshield. This can result in dangerous glare (particularly at night). The best way to remove this grime is to use a high quality glass cleaner (preferably odorless) applied with a clean, lint-free cloth.
- **Ice Scraper and Snow Brush.** To clear your vehicle entirely clear of snow and ice. I hope you'll check out the IceDozer and SnowMover products available from the Innovation Factory, Inc. [www.InnovationFactory.com](http://www.InnovationFactory.com).

### EVERYONE COMPLAINS ABOUT THE WEATHER

On March 27 2001, Tucker Marion and I were on a flight from Philadelphia to San Francisco to pitch our Secret Decoder™ invention to a prominent toy company. (Tucker's the handsome fellow on the left in the accompanying snapshot). Our company, the Innovation Factory, had been working on the concept for nearly 6 months and we were exhausted emotionally and financially. In the course of the flight, I turned to Tucker and complained about the ice and snow that almost made me miss the flight. What was it about the cheap ice scrapers and snow brushes that made this task so messy and difficult? We decided to spend the next few hours analyzing the problem from 'first principles'. By the time the plane landed we had



– including a survey of 600 drivers – Tucker and I decided to redirect our entrepreneurial energies towards the creation of products that truly enhance driving safety. All of our Company's products come with a lifetime, full-replacement guarantee.

- **Jumper Cables.** Never leave home without them, and make sure you know how to use them safely. Another alternative is to keep a battery booster (also known as a jump starter) charged and ready for use. You want to select the kind that jumps your battery through a direct connection with clamps (not via the cigarette lighter).
- **Matches, Lighter and Candles.** Should be kept in a watertight container (such as your empty coffee can) or plastic bag. Consider a few small boxes of 'waterproof' matches. With a blanket held over your head, the warmth from a single candle – plus your body heat – might make the difference between life and freezing to death.
- **Owner's Manual.** If you're like some people, the last time you consulted your manual was when you bought your vehicle. Now's a good time to make sure you can find it when you need it. While you're at it, check to see if your manufacturer has provided some do's and don'ts for handling winter driving.
- **Rags, Paper Towels and Toilet Paper.** Paper towels are very useful, particularly as a source of kindling should the need arise. Also, throw in some hand cleaner packets and keep a stash of plastic grocery bags in the vehicle trunk to dump your trash into.

- **Road Atlas.** You shouldn't have to get really lost more than once to appreciate the utility of a good road atlas. They are inexpensive and far more useful than just a local map. Why? Because in my experience, you're not usually lost *until* you've traveled beyond the boundaries of the local maps. With a detailed atlas, there's no such thing as terra incognita. Consider at least a decent state or regional atlas while a national atlas is a must if you're planning any long distance travel.
- **Signaling Devices and Hazard Warning.** A brightly colored cloth (hunter's orange is a good color) can be used as a distress flag when tied to the antennae (or wedged into a window). Also consider flares or at least a heavy duty folding reflective triangle (that won't blow away) to place on the roadway behind your disabled vehicle.

#### **TAKING THE 'SEARCH' OUT OF SEARCH-AND-RESCUE**

High tech is coming to the rescue to help locate stranded motorists. Under rules (issued in both the US and Canada) cellular network providers have until December 31, 2005 to implement Enhanced 911 (E911) services. Unless further delayed, E911 will require each provider to be able to pinpoint (to within roughly the length of a football field) the location of a mobile phone user. This is important since more than 100,000 emergency calls are made each day from cell phones. E911 will clearly help rescue agencies to save lives. But, depending upon how the technology rolls out, E911 will also empower location-based information services. For example, one day



you might be able to instruct your cell phone to “find me a Thai restaurant within a 10 minute drive of my location, make me a reservation and provide driving instructions”. Of course, depending upon how privacy protection is implemented, E911 could also be used to establish grounds for divorce. In the meanwhile, the governments of both the U.S. and Canada have recently approved an emergency beacon locator technology for personal use. These satellite-based systems (traditionally referred to as ELT or EPIRB) have saved the lives of thousands over the years (in military, maritime and aviation emergencies). A Personal Locator Beacon is about the size of a

remote control and weighs in at a little over a pound. They are pricey (at upwards of \$700) for something you hope to never have to use. But it's the best option if you want rescuers to quickly and reliably home in on your location (particularly if your cell phone is out of range).

- **Siphon.** An inexpensive pump-siphon is compact and costs less than \$10. Very handy if you run out of gas and a Good Samaritan offers to let you siphon off some from his or her tank to help get you going.

It's also the safest and easiest way to extract gasoline (even light grades of oil) from your own disabled vehicle should you need to resort to 'extreme measures' to keep warm (as discussed in Section VI).

- **Snow Shovel.** To dig yourself out if you get stuck. But remember not to overexert yourself. You already know that it's bad for your heart, but the more imminent risk is from hypothermia (which can result from sweating up your clothes). Select a small, folding model. I hope you'll consider the SnowMover™, a product of the Innovation Factory.
- **Squeegee:** During transition seasons and warm spells (or if you live farther south), the problem in the morning can be from mist caused by fog or dew. You might also discover a just-melting frost buildup on the glass of your vehicle. On those days, a squeegee is incredibly helpful – particularly to clear the side and rear windows.
- **Sunglasses.** For protection against the harsh glare of a low winter sun and the blinding reflection of sunlight off of clean, fresh snow. Invest in a quality pair of sunglasses that work well for driving and keep them in the vehicle.

#### **Your Most Important Safety Tool**

If you can't see where you're going, the outcome will be the same – someone's going to get hurt. That is why your eyes are truly the most important tool you bring to the challenges of winter driving. It is the reason we provide 'eye exercises' (Part IV, below) and stress the special dangers of night driving. It's also why good sunglasses are so important. Here are the *most basic* considerations in selecting a pair to use while driving:

- ❖ **Quality.** Good sunglasses will block the (invisible) ultraviolet rays in sunlight while reducing the intensity of the (visible) light to a more comfortable level for your eyes. Sunglasses should also be effective in reducing glare (which is basically light reflecting off of water, the hood of your car, the snow or other surfaces). A high quality pair of sunglasses will also feature optical-quality lenses to insure a distortion-free view of your surroundings. When you buy cheap or 'imposter' sunglasses, you may be sacrificing all of these benefits. In fact, you could be making things worse.
- ❖ **UV Protection.** Ultraviolet light comes in two forms, UV-A and UV-B. Exposure to this radiation can result in cataracts, cancer and even 'sunburn' of the retina (the most common form of this condition is what is referred to as snow blindness). You need to protect your eyes from UV, and all quality sunglasses provide this benefit. But UV protection is NOT important when selecting your driving glasses since modern windshields are designed to block out this invisible radiation. This is also the reason that photochromic lenses (marketed popularly under the Transitions™ brand) will not darken while you are driving.



Photochromic lenses are designed to be triggered by the invisible UV light that is already blocked by your car's windshield.

- ❖ **Tinting.** The color of the tint is not just about making a fashion statement. It's the most important factor in determining whether the sunglasses are best suited for driving. There are many choices, but basically gray tints are probably the best all around. These lenses substantially reduce the amount of brightness without sacrificing much color distortion. They are also pretty good at reducing reflected glare. Amber and brownish tints are also a good overall choice, and they have the added benefit of increasing contrast and clarity. But these tints can also distort color perception (which is important to safe driving). That is particularly true of yellow or gold tints that virtually eliminate the blue portion of the spectrum. But these lens colors also have the effect of making everything sharp and bright. And since blue light tends to bounce and scatter off of most surfaces (including snow) yellow or gold tinted sunglasses are good choice winter sports enthusiasts. Green tints are also a decent choice overall, because they provide the highest contrast and visual acuity while filtering out some of the blue light.
- ❖ **The Correct Prescription.** Motorists, who have prescription eyeglasses, may prefer to wear prescription sunglasses while driving. Make sure to replace your sunglasses lenses every time you change your prescription.

- **The Essential Guide to Safe Winter Driving.** Keep in your glove compartment. While you're thinking about it, take the time to fill out the Emergency Information (in the space provided on the inside of the front cover of this Guide). If you get into an accident or your vehicle breaks down, you'll be very glad to have all of this data available in one place.
- **Tools and Toolbox.** Even if you're not very handy, some of your passengers (or a passerby) may be able to put the following to best use. Regardless, even if you're a mechanical novice, necessity really is the mother of invention, so consider packing the following:
  - **Adjustable Pliers.** And an assortment of wrenches.
  - **Axe, Hatchet or Small Folding Saw.** To chop up branches for additional traction under your tires, as well as for firewood if it comes to that.
  - **Center Punch.** This relatively obscure and inexpensive carpentry gadget is the 'tool of choice' of car-radio thieves everywhere. If you find yourself truly trapped, the center punch can help you escape by letting you shatter a side window. But don't bother trying to break the windshield – that glass is designed NOT to shatter. Store the center punch inside the vehicle so that it's at hand should you ever really need it.
  - **Duct Tape.** Handy for just about everything.

- **Flashlight.** With lots of spare batteries.
- **Heavy Duty Hammer.** A must for banging on the lug wrench (or lug iron) to loosening up the lug nuts. Consider a ball-peen hammer or even a 'half hatchet' (which eliminates the need for a separate axe).

**IF I HAD A HAMMER - A true but embarrassing story!**

A few years ago, while driving near Waterville Valley in New Hampshire I decided to take my young family on a scenic tour in our new station wagon - down an unpaved country road. Three miles later, in the middle of the White Mountains National Forest (and well out of cell phone range) we hit a huge pothole resulting in an immediate flat. No problem, I thought, as I jacked up the car and prepared to put on the spare tire. But alas, for all of my sweating, coaxing and cussing I just couldn't dislodge the (over tightened) lug nuts. Fortunately, a hiker happened by who hurried back to civilization and called a tow truck. The mechanic quickly addressed the problem with a few blows to the lug wrench from a 10 lb. sledge hammer. After more than three hours (and \$50 'wiser') we were on our way. An expensive lesson I've never forgotten, and hopefully one that you can now avoid.

- **Lug Wrench and Jack.** Hopefully already in your car. Make sure you're carrying the keys to any wheel locks. Make sure your spare tire is in good shape and properly inflated.
  - **Mechanic's Wire.** Simple wire that is good for reattaching anything that is rattling or falling off (after you hit a pothole). And throw in some heavy-duty rope while you're at it.
  - **Pens and Paper.** To pass the time as well as to write down essential instructions.
  - **Pocket Knife.** Beware the cheap no-name versions, they can break easily.
  - **Scissors.** Should be at least as strong as kitchen shears.
  - **Screw Drivers.** With multiple heads, including a broad flat head to remove your hubcap as a life-saving measure (should you become stranded – per the discussion in Part VI).
  - **Tire Gauge.** Keep those tires properly inflated.
  - **Whistle.** You want one that is really loud and piercing, such as a 'rape whistle'. Hopefully, you already keep one in your purse or on a key ring for use in non-driving emergencies.
- **Tow Chain or Strap.** Make sure you follow your vehicle manufacturer's advice before using
  - **Traction Material.** Sand, salt or non-clumping (clay type) kitty litter to put under your drive wheels should you get stuck in the snow. Tire chains work even better (if permitted by local authorities) but they take some effort to install. You may also wish to invest in a traction mat (which folds, or rolls up, when not in use). Appropriately enough,

traction mats are often made from recycled tires. Make sure that if the mat has any metal fittings that these are made of brass (or another material that won't rust from use).

#### **The Great Weight Debate**

Growing up in the Midwest, it was a piece of common wisdom to add weight in your trunk (by loading up on sand) in order to improve driving traction. Unfortunately, things are not as simple as they once seemed. The experts now suggest that you only add weight to the drive wheels – and in front wheel cars, the engine provides all the heft you need. If you have a rear wheel drive vehicle, care must be taken to add the weight directly over the axle. Otherwise, you run the risk of slightly lifting up the front of the car - resulting in a critical *reduction* in the traction necessary for steering. There is one simple and safe way to maintain extra weight in the back. Keep your gas tank full (which also has other winter-driving benefits, as we have discussed). A gallon of gasoline weighs around 6 pounds. A mid-sized car carries approximately 19 gallons. This works out to 114 pounds of ballast. By comparison, a fully fueled Ford Excursion carries 44 gallons totaling 264 pounds of gasoline.

- **Walkie Talkies.** If you must leave your car during a snowstorm, a quality set of walkie talkies will let you stay in touch with the other passengers (as long as you don't venture too far). They are also handy if you are traveling on your winter journey in a 'convoy' with other vehicles. But regardless of their benefits as a safe-driving tool, they're great to have when you're at the mall and you and your wife decide to divvy up with the kids into separate shopping safaris.
- **Weather Radio.** If you want the most accurate and timely weather information – you should go to the source. An inexpensive weather radio can pick up continuously updated broadcasts from the National Weather Service via NOAA Weather Radio (and, on the same frequencies, from WeatherRadio Canada). You might want to buy a version that can also be tuned to AM/FM frequencies (to conserve on using your car radio if you fear a long wait until help arrives). Typically, these broadcasts can be heard as far as 40 miles from the transmitting stations (which pretty much blanket the populous regions of both the United States and Canada).

## ***II. Tips Before Starting Out***

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**Do Like the Airline Pilots.** As 'captain' of your vehicle it's your responsibility to carefully assess its status before every flight (err...trip). And don't make any potentially dangerous assumptions. For example, even a car left in the garage overnight can show a flat tire in the morning (resulting from a slow leak courtesy of that true bane of winter driving – the pothole). Remember, lives are depending on you.



- **Walk Around.** Examine the tires, take a quick peak underneath the vehicle (to make sure nothing shook loose and is dragging). Make a mental checklist of which of the tasks you'll need to address, particularly before starting out on a long trip. If you 'rode your mechanical steed hard and put him away wet' the night before, you may have some work to do.
- **Remedy for Frozen Door Locks.** If moisture gets into the lock it can freeze the tumblers and then you're not going anywhere. If you don't have a lock thaw product handy, it can help to simply warm your keys with a lighter before inserting. A lighter is a handy item to keep in your pocket or purse – not in the glove compartment – so you have it when you need it. A more radical, alternative is to simply keep your car unlocked if a winter storm has already started. Thieves won't know that your car is unlocked under all that snow and ice, and besides, they'd have to dig out your car before stealing it! An option I personally consider, particularly when freezing rain is in the forecast.
- **Replenish your Winter Survival Kit.** If you used up any of the items from your kit (including food and water) now is the time to restock (and remember to make a notation in the space provided on the inside back cover of this booklet).
- **Safe Driving Starts with Clear Visibility.** The need for a clear view is never more critical than in the winter when roads are slick (and pedestrians are too bundled up to pay proper attention). Before driving, remove snow and ice from ALL windows and mirrors. You should also clear snow from the hood, roof and trunk of your vehicle. Do this both for your own safety, as well as the safety of other drivers who don't want any unpleasant surprises (in the form of snow and ice peeling from the roof of your vehicle) Never use windshield wipers to clear ice and snow; it can damage the blades and burn out the wiper motor. Remember, windshield wipers are not snow plows.

### STAY OUT OF HOT WATER

When your car is coated with an icy sheen, it can be awfully tempting to douse the windshield with a nice warm bath of boiling water from the kettle. Unfortunately, automobile glass is not designed for that kind of sudden temperature shift and a cracked windshield will almost certainly be the result. Save the hot water for a nice cup of cocoa.

- **See and Be Seen.** Clear the snow and ice from your headlights and taillights as well. Wipe them down with a cloth to remove the accumulated road grime. It's recommended that you drive with your headlights on – day or night – whenever the weather is inclement. Dirt on the headlights can reduce visibility by 50% or more.
- **Clear the Snow From the Roof.** You've carefully cleared the snow and ice from your windows, but what happens the first time you stomp on the brakes? Whumpf! You're in a dangerous white-out as the snow shifts forward from overhead. Clear *all the snow* from your vehicle, including snow on the hood which can blow back at you as you drive.
- **Remove the Grime From Inside as Well.** Even new cars will quickly accumulate a residue of oily grime on the inside of the windshield. And smoking makes the condition much worse. This all can result in dangerous glare (particularly at night). Most people use their sleeve to address the problem. The best way to remove this grime is to use a high quality glass cleaner (preferably odorless – don't use the windshield washer fluid). Apply with a clean, lint-free cloth.
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### WE'RE ALL GUILTY

Winter can be beautiful, until you find it all over your car on a frigid morning. Exhilaration turns to chagrin. It's cold; the kids are



complaining; you're running late for an important appointment. So we flaunt common sense by clearing just a peephole in the snow and ice covering the windshield. Such behavior is extremely dangerous. Consider these facts: The driver of a typical sedan (such as a Honda Civic) is surrounded by approximately 4,670 square inches of glass. This includes the windshield as well as the back and side windows. But there are still blind spots (where the pillars support the roof) that block the driver's view. These blind spots can and do result in accidents (even when the weather is perfect). Motorists should always have an unobstructed 360° view through the vehicle's glass surfaces. This is never more critical than during the unforgiving conditions of winter. We estimate that the 'typical' peephole 162 square inches (9 inches by 18 inches, roughly two hands' breadth with the fingers spread wide). This works out to just 3.4% of the available glass surface in a mid-sized car. Put another way, a peephole driver is attempting to navigate with more than 96% of their visibility obscured. These motorists are surrounded by an all-encompassing blind spot that may conceal terrible dangers: another vehicle running the light; perhaps a distracted mom struggling to cross the street pushing a baby carriage. Even motorists who clear the entire driver's half of their windshield are still driving more than 80% blind. And in a large SUV, the corresponding numbers are even worse. Local legislatures are now considering laws specifically targeting peephole driving. Some of these proposals would also penalize drivers for failing to clear the snow and ice from the rest of the vehicle surfaces as well. This wintry debris can blow off - surprising trailing motorists into taking instinctive evasive actions (with deadly results on slick roads). To learn more about what you can do, please visit **[www.CenterForSafeDriving.org](http://www.CenterForSafeDriving.org)**.

- **Clear the Wiper Blades.** Remove any ice and snow and wipe down the blades with a cloth wetted with windshield washer fluid. You'll be amazed at how dirty the blades have gotten. While you're at it, go ahead and top off the washer reservoir. Be sure the wiper nozzles are unobstructed.

#### **IT'S ALWAYS THE 'OTHER GUY'**

In a recent survey of more than 500 drivers (conducted by the Innovation Factory), 59% of respondents answered that they were worried about having a winter accident. Why? Because they drive without completely clearing the snow and ice from their vehicles. In fact, more than 80% expressed worry about being involved in an accident because *other drivers* fail to clear off their vehicles.

- **Clear any Fog and Dew Buildup.** Mist (whether due to fog or dew) builds up when relatively warm, humid air condenses onto the cold glass. The wipers (and defroster) can handle the external moisture, but what about condensation on the inside of the windshield? If it's bitter (and consequently, very dry) outside, your own warm breath will

invariably result in foggy glass. This worsens with additional passengers and pets. But here's a simple remedy. It involves the use of the dehumidifier (i.e. the air conditioner) already installed in your vehicle:

- **Open the Side Windows a Crack**
  - **Turn on the Air Conditioner**
  - **Set the Temperature to Warm or Hot**
  - **Select for Defrost**
  - **Turn the Blower on High**
  - **Select for Fresh Air**
  - **Turn on the Rear Defroster**
- **Clear the Snow From Your Heater Air Inlet.** This is the grill usually found just below the windshield, on the outside of the vehicle. This inlet is how fresh air enters your vehicle for purposes of heating as well as cooling. It must be kept clear to prevent your interior windows from continuing to fog up (or frost over). As a general rule, you should always select fresh (exterior) air when operating your heater rather than recirculating the inside air. This cuts down dramatically on the fogging of interior window surfaces while reducing the risk of carbon monoxide poisoning.
- **Check the Exhaust Pipe.** Make sure that blowing snow hasn't clogged your exhaust system. An obstructed tail pipe could result in a dangerous buildup of carbon monoxide inside the vehicle.
- **Ladies and Gentlemen, Start Your Engines.** The best way to start a late-model car on a cold day is to simply turn the key in the ignition (holding it for no more than 10 seconds). Do not pump the gas pedal (before turning the key); this will not 'prime' engine (the computer isn't 'listening' at that point). And if you pump while cranking a fuel-injected engine, you will probably just confuse the computer (which is already doing its programmed best to start the car). However, if your car doesn't start within two cranking sessions (of no more than 10 seconds, please) wait a few moments and try again with the pedal just slightly depressed. If there's still a problem, try cranking yet again – but this time pressing the pedal to the metal. The engine computer should recognize a fully depressed throttle as the signal to attempt to clear a flooded engine.

#### **KNOW YOUR ENEMY**

Ice can be extremely difficult to pry off the windshield because of its unique physical properties. These include its very strong powers of adhesion (which is why frost can seem to be painted onto the windshield). Ice also has an uncanny ability to 'creep' around solid objects. Ice is also very hard, a characteristic which increases more than a hundred-fold as temperatures drop. At -40° Fahrenheit (which is also -40° Celsius) ice is nearly as hard as quartz, which is to say tougher than the blade of your pocket knife. That's why you can tell

the coldness of a winter's day by the sound which the hard grains make crunching together – just like the sound of walking on sand made of quartz particles. But ice also becomes increasingly brittle as temperatures plummet. This tendency to fracture under sudden stress is its Achilles Heel. I suggest 'tenderizing' the ice on your windshield (to create hairline fractures) before attempting to scrape at it. Remember the Innovation Factory motto: Don't Work Hard, Work Smart™. The Tenderizer™ is one of the three unique ice attack surfaces built into the Company's IceDozer™ line of products.

- **DON'T Be Idle.** Back in the days of the carburetor, all young drivers were taught to warm up the engine before driving the car on a cold day. With the advent of modern fuel injection (and other advances) the experts today recommend limiting the amount of cold running time to no more than 5 minutes (at which point it's perfectly safe to drive off). By actually driving, you increase coolant and oil temperatures more quickly which also kicks more heat into the passenger compartment. At the same time you will be warming up the rest of the transmission system. However, drive the vehicle gently until the engine reaches normal temperature, and never race a cold, stiff engine to 'warm it up quickly'. Of course you should stay put until all of your windows are completely clear. Don't be bashful about letting the car warm up in the driveway if that's what it takes to fully defrost.
- **Fill the Gas Tank.** Water can separate from the gas and freeze on the inside of the tank. Eventually, these ice particles can become lodged in your fuel line and cause problems. The best solution is to keep your gas tank filled (which exposes less of the tank to cold air) and consider adding a fuel system supplement every few fill-ups. But the most important reason to keep a full tank of gas is to insure that you'll have the fuel to run the engine and heater in case you get stuck or break down. This is particularly important if you are heading into sparsely populated country.

#### **SAVE THE PLANET**

The Natural Resources Canada has kicked off an anti-idling campaign in order to protect the environment and reduce wasted fuel. It is estimated that Canadian motorists idle their vehicles for more than 75 million minutes a day during the winter (the same as leaving your personal vehicle running for 144 years). By reducing the average idle time by just 5 minutes, 3800 *less* tons of carbon dioxide (a greenhouse gas) would enter the atmosphere each day. This is a savings (in tons of carbon dioxide) equal to the weight of 633 elephants. Many U.S. states also have laws limiting the idling time of both commercial and personal vehicles.



### ***III. Safe Driving Habits***

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#### **RISK MANAGEMENT**



As a wise sage once said, 'the future, it lasts a long time!' If you want to be around to enjoy it, you must make prudent decisions about the risk every time you consider driving under hazardous conditions. To help you choose the wisest course, consider the following.

- **Take a Deep Breath and Relax.** Even if you normally enjoy driving, the challenges of winter are almost guaranteed to generate stress. Between uncomfortable temperatures, bad visibility, poor road conditions, rude drivers and the inevitable delays, winter trips can be a challenge. So relax - because you'll need your wits about you if you're going to make good decisions throughout your trip.
- **Just Say NO!** Most winter driving accidents happen within the first few hours of a storm. The simplest way to avoid becoming a statistic is simply this: DON'T GO until the roads are cleared! Is this trip truly worth the very real risks entailed? Try to evaluate your options dispassionately. If you do have to travel during a storm, take someone with you to help out if you get into trouble.
- **Check Weather and Travel Conditions.** In our modern lives, we often become inured to the natural rhythms of the weather around us. But it's more prudent to think of winter as 'she who must be obeyed'. Pay attention to the forecasts and plan accordingly, because it's cold out there. Keep listening while you drive since weather and travel conditions can change quickly.

#### **WINTER WEATHER DEFINITIONS**

Listening to the weather can be confusing if you don't know the 'lingo'. To take full advantage, here are the specific meanings of the terms you'll hear most commonly used when winter weather is in the forecast:

- ❖ **Outlook.** Significant winter precipitation is possible in the next 3-5 days. An outlook does not guarantee this event will occur. Consider this a 'heads up' to monitor continuing forecasts.
- ❖ hours. Not a sure thing, but alerts you to the possibility of hazardous weather. Watches are only issued for winter storms, heavy snow or blizzards.
- ❖ seriously threaten life or property. This is the most serious of the winter weather messages and is your notice to take immediate action to prepare for the coming storm. Warnings are issued for

winter storms, heavy snows and blizzards as well as for ice storms and heavy sleet.

- ❖ **Advisory.** Issued for winter precipitation that is NOT expected to produce significant risks to life or property - but which could still impact travel safety. Advisories are issued for a variety of winter weather conditions.

- **Plan Your Route.** Even if you are a navigational whiz, never leave home without your maps (and hopefully a detailed road atlas). You'll be glad should you find yourself involuntarily detoured from the expected route. Consider alternatives to the back roads you might otherwise use. Always leave extra time to travel so that you won't feel rushed. There's truth in the old saying, "If you don't know where you're going, any path will take you there."
- **Let Other People Know.** If you are traveling a long distance, let someone know of your destination and when you expect to arrive. This is akin to filing a flight plan. Please record the appropriate contact information with the other Emergency Information on the inside front cover of this booklet.

#### CONVOY

Just like in the movie, there's safety in numbers. If possible, particularly when taking a long journey, try and convoy with other vehicles. In our household, we sometimes coordinate winter vacation trips with my in-laws. This gives my kids a chance to use those walkie talkies (discussed above) to chat with their cousins all the way to our destination.

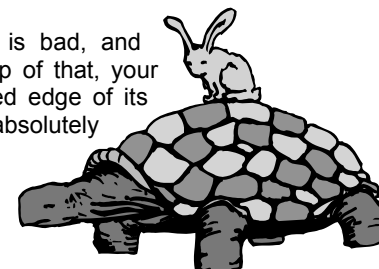
- **Drive Defensively.** Given the hassles and difficulties of winter driving, you need to drive as if everyone is out to get you – intentionally or not! Here are some of the 'characters' to be wary of:
  - **Peephole Drivers.** Those who navigate virtually blind to their surroundings because they've only cleared a small viewing slit. Peephole driving is a common but dangerous practice, particularly in parts of the United States where motorists are less prepared for the winter onslaught.
  - **Inexperienced Drivers.** This includes young people, out-of-towners, and the entire population of cities like Atlanta. Individuals who don't see enough snow to get the hang of safe winter driving.
  - **Road Warriors.** May be driving 4WD vehicles or SUV's. Not only do they overestimate their personal skills, but they overdrive the ability of their vehicles to maneuver and stop on slick surfaces.
  - **Road Ragers.** Be wary of those around you, winter can drive some people to their breaking point. One fourth of the drivers in a recent AAA survey admitted to becoming angry with other motorists. If you encounter such an individual, try

not to make eye contact and move away by changing lanes or slowing down. Then call 911 before someone really gets hurt. Never indulge the road rage by trying to get even – you're more likely to get dead!

- **What if the Emperor Has No Clothes?** You've been driving for a while and it's increasingly clear that the weather is taxing your abilities. This can be awkward (particularly if there are other passengers involved who told you in the first place that this was a bad idea). You just have to face facts – declare an 'emergency' – and seek refuge as quickly as possible. Loss of 'face' is nothing compared to loss of life or limb.

## GO SLOW IN THE SNOW

Everyone is slipping and sliding, visibility is bad, and many people are having a bad day. On top of that, your vehicle is probably performing at the ragged edge of its operating envelope. So try and do absolutely everything more deliberately than usual.



- **Start out Slowly.** To start on snow and ice, keep your engine speed low. If your wheels spin, shift to second or low gear.

### BURNING RUBBER

Tumes tire tread while often digging you in deeper (as the burning tire melts the ice). Have you ever complained to your boss (or mom) about 'just spinning your wheels' on some useless undertaking? Then you really have no excuse, because you already understand the wisdom of this metaphor.

- **Get a Feel for the Road.** When just starting out (and while well away from other cars, pedestrians and other obstacles) gently 'try out' the road conditions. Experiment with sudden acceleration, braking and turning to get a sense of how well your car will respond when it's 'show time'. In particular, the first hard stop you make should be under controlled circumstances, NOT in a panic situation.
- **Think Traction.** The laws of physics dictate that on an icy surface your tires will only have one-half to one-tenth of the traction you are used to. All because of reduced friction. Your control (and well being) depends upon the hand-sized contact patch, or 'footprint', where the tread and road meet. Breaking, accelerating and steering all 'take up' some of your wheel's traction. On very slippery roads, it's a good practice to only do one thing at a time. If steering is most critical at a particular moment, then ease off the brakes and gas pedal. Try not to turn-and-brake, or turn-and-accelerate at the same time. Likewise, if

braking becomes the absolute priority, don't steal crucial traction by also attempting to steer simultaneously.

- **Black Ice.** Roads that are intermittently dry, then icy, are the most dangerous. If the road ahead looks black and shiny (like asphalt) be suspicious. The surface may be covered with a thin layer of 'black ice'. Generally, asphalt in the winter should be grayish or white. Beware of shaded areas, over/underpasses and bridge surfaces. These may become (or remain) icy even when the rest of the road surface is already dry or merely wet.
- **Coming Into a Turn.** Slow down considerably before entering a curve or making a turn. Take your foot off the gas and downshift if necessary to let the engine slow you down. Then *gently* begin to brake. As you come out of the turn you can begin to gradually accelerate. One of the common mistakes in winter driving is to turn the steering wheel either too quickly or too much. You lose vital traction by over rotating the wheel and then having to turn it back.

#### **ESKIMOS HAVE MANY WORDS FOR SNOW**

You also need to become a connoisseur of its myriad forms in order to respect how snow can influence traction. Snow can be old or new, fluffy or crunchy, wet and slushy, or hard-packed and slippery as, well, ice. Snow can also conceal icy patches. Or the snow may have re-melted to form a rutted battlefield full of hard tracks and gullies. Moreover, the conditions can and will change during the course of your journey depending upon the type of road you are using, how well (and recently) it has been maintained, the flow of traffic and of course the constantly shifting winter weather.

- **Drive Deliberately.** Unless the roads are completely clear and dry, drive below the posted speed limits (which are intended for summer driving on dry pavement). Driving too fast is the number one winter driving error. Excess speed means that mistakes will happen faster, and with more 'dramatic' results.
- **Look Well Ahead and Anticipate Problems.** By being inattentive, you may be forced to react to problems abruptly, often resulting in loss of control when surfaces are slick. Look farther ahead in traffic than you normally would (keeping a special eye out for those 'road ragers'). Remember that winter roads may also be narrower (because of snow plowed up on the sides). As a consequence, you may have even less margin for error if you need to take evasive actions.

#### **PRACTICE MAKES PERFECT**

This is all a lot to remember. How are you to develop an intuitive feel for the correct driving habits? The best way is to take lessons from a professional driving school. If that isn't an option, then take the time to practice cold weather driving on your own. During daylight hours, rehearse various maneuvers - slowly - on the ice or snow of a big empty parking lot. Purposely steer into a skid, stomp on the brakes and then suddenly accelerate. Test the ABS system (if your vehicle is

so equipped) or practice panic stops by manually pumping the brakes. Practice until you're really comfortable controlling your vehicle. While growing up in Akron, Ohio, practicing our winter driving skills was considered a high form of entertainment. I hear that there's more going on these days in Akron to occupy the teenagers. ☺

- **Be Especially Careful at Night.** Don't overdrive your headlights. It's prudent to keep your headlights on day and night during the winter.
- **Going Down a Hill.** Usually best accomplished at a lower gear. This will slow your momentum without applying the brakes (that could precipitate a skid). But don't go too fast in low gear. This could result in back pressure within the engine leading to wheel lock.
- **Going Up a Hill.** When attempting to drive up a slippery hill, use the highest gear possible. By doing so you will reduce the potential of wheel spin (since less power is being applied to the drive wheels). Be wary of the temptation to take a running start to propel you up a steep hill. This idea won't seem so smart if you lose control (or find yourself stuck) partway up an incline that your vehicle simply can't climb. Backing down a crowded, slippery hill can be a nightmare.
- **Threshold Breaking.** It can take 4-10 times as long to stop on slick roads. If you hit the brake too hard you'll momentarily lock the wheels - losing traction - which is the worst thing you can do. Slow down gradually and brake only as hard as necessary without locking up the wheels or skidding. If you feel the wheels beginning to lock, release the brake pressure slightly and then re-apply gingerly. If you have the presence of mind, you can also shift to low gear to help you stop.

#### **YOU CREEP!**

An important corollary to driving slowly is to avoid stopping - ever - if you can do so without violating traffic laws (or common sense). One of the laws of physics dictates that objects at rest tend to stay that way - which means that if you stop your vehicle on a slick, frictionless surface you may have a very hard time getting going again. So try 'creeping' instead. For example, if you see a red light up ahead, start slowing down early enough that you can still be in motion (even at just 1 mph) when the light changes. This technique is also very handy if you need to drive in very deep snow. It was Thanksgiving weekend, back in '74, and a freak blizzard had broken out across the Midwest. I volunteered to drive a car full of college buddies home from Ann Arbor, Michigan to Akron, Ohio in my AMC Gremlin (sporting worn summer tires). While I now cringe at my foolishness, we did in fact make it the entire way, but only because we never stopped until we hit my driveway in Akron (where the car then sat immobilized - which is what AMC Gremlins were always best at). So remember to do the creep, the next time you're *about* to get stuck.

## IF YOU LOSE CONTROL



You know the feeling. Suddenly, your car has a mind of its own. You feel like a hockey puck sliding down the ice. Everything seems to go into slow motion as you skid out of control, about to play bumper cars – or worse. Here's what to do the next time this happens to you.

- **Why Am I Skidding?** Your car begins to skid when momentum overcomes the friction holding your tires to the road surface. This can occur even at very low speeds if the roads are particularly slick. Loss of traction is usually the result of:
  - **Driving too Fast for Conditions**
  - **Turning too Fast**
  - **Hard Breaking**
  - **Sudden Acceleration**
- **“The Car is Ignoring Me” Skid.** Also known as the ‘understeer’. You are driving along and decide (too suddenly) to make a turn. This usually happens because you entered a corner going too fast. You turn the wheel, but the car continues straight ahead, blithely ignoring your inputs.
- **The “Fishtail” Skid.** Also known as the ‘oversteer’. This happens when you are driving straight ahead and suddenly the back wheels begin to slide right or left, throwing the front of the vehicle in the opposite direction. Left unchecked, the car may spin entirely around.
- **What to Do When You Begin to Slide.** Even careful drivers can find themselves in a skid, particularly when precipitated by the irresponsible behavior of other drivers or pedestrians. Your objective is to regain tire grip as quickly as possible. Without traction, you are literally just another passenger in the hurtling vehicle. While every circumstance is different, here are the basic DO's and DON'T's which have saved me on more than one occasion.
  - **DON'T Panic.** This is actually possible if you've practiced beforehand.
  - **DON'T Try to Accomplish Two Things at Once.** Breaking, accelerating and steering all require traction of which you have precious little available. By concentrating on just one thing, you dramatically improve your chances for success.
  - **DON'T Slam on the Brakes.** See the discussion of ‘panic stops’, immediately below.
  - **DON'T Try and Fight the Skid.** Wild gyrations of the steering wheel only make matters worse. More accidents are caused by over-reacting than by the underlying skid.

- **DON'T Rush Things.** Wait until you regain sufficient road grip before trying to steer the vehicle in the direction you would like it to go. If you overdo it, you'll just keep skidding.
- **DO Take Your Foot Off of the Accelerator.** Remember, just one thing at a time.
- **DO Steer INTO the direction of the skid.** This means that you steer STRAIGHT AHEAD if the car is 'ignoring' you. But if the car is fishtailing, then steer into whichever direction the REAR OF THE CAR is taking you. You want your steering wheel aligned with the direction of the car's motion to increase the chance of your catching some traction.
- **DO Make Only Gentle Steering Corrections.** Patience is hard, but the laws of physics ultimately control your fate. Now is not the time to give in to the temptation to spin the steering wheel wildly.
- **When Fishtailing, DO Gently Reapply the Gas.** This may be all you need to return rear tire traction.
- **DO Come to a safe stop.** Make sure no one is hurt, that you didn't run into anything (or anybody) and nothing is broken. Regain your composure before proceeding.

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are important risks you must bear in mind as well:

❖ **Four-wheel drive won't help you stop any faster.** In fact, SUV's require proportionately greater stopping distances even when compared to vehicles of comparable weight.

❖ **SUV's are not as maneuverable.** They are more likely to lose control, especially on slippery roads, because they have a higher center of gravity. They are also particularly susceptible to the effect of the high winds that can accompany



**no increase in safety.** It's

n SUV and a car, the driver

e. But when an SUV hits an

embankment (or collides with a larger vehicle) the greater weight of the SUV works to its disadvantage resulting in greater risk of injury to the occupants of the SUV.

❖ **SUV owners are more likely to succumb to 4WD overconfidence.** The tell-tale sign of this road warrior behavior is driving faster than other motorists – especially in bad weather.

Something to think about before you find yourself in a screeching skid, about to broadside a young family whose terrified kids are staring at you from the back seat.

- **Panic Stops.** Sometimes you just have to try to stop as quickly as you can, even while in a skid. The correct response is to pump the brakes in order to avoid locking the wheels.
  - **With Anti-Lock Brakes (ABS).** Anti-lock brakes were originally developed to stop aircraft. There's simply no better way to stop your vehicle in an emergency. If your vehicle is equipped with an ABS system, apply very firm pressure and let the computer pump the brakes for you. If you haven't previously experienced an ABS system in operation, be warned that you will feel a strange stuttering or rumble. This is completely normal. Keep the brake pedal fully depressed until the vehicle has come to a complete stop. Never (manually) pump the brakes in a vehicle equipped with ABS. This will only confuse the computer and could make matters much worse.
  - **If Your Vehicle is NOT Equipped with ABS.** You'll need to manually pump the brakes by depressing and quickly releasing the pedal as rapidly as possible (whatever it takes to avoid skidding).
- **Cruise Control can be a Killer.** With cruise control, the car either accelerates or slows down to maintain a constant set speed. This is fine on dry, clear pavement but not on slippery roads. Invariably, the car will sense the need to suddenly increase or decrease speed just as you hit an icy spot – resulting in a potentially disastrous loss of control.
- **If You Can't Stop and an Accident is Unavoidable.** Sometimes you have enough time and control to affect how an impending accident will unfold. If you have the presence of mind:
  - **Turn Away From Oncoming Traffic.** Even if this means leaving the road.
  - **Drive off the Road.** Rather than skidding.
  - **Choose to Hit Something 'Soft'.** Like a shrub or a nice snow bank.
  - **Choose to Hit Something Going Your Way.** If you have to hit anything, make it a glancing blow that will help to slow you down.
  - **Try to Never Hit Anything Head On.** A head on collision only magnifies the energy of the impact.
  - **Don't Succumb to 'Target Fixation'.** Avoid focusing on your impending doom instead of taking available evasive actions.





## OTHER TIPS TO KEEP YOU OUT OF TROUBLE

The National Highway Traffic Safety Administration says that **distracted driving** is the cause of one-quarter of the nation's 6.3 million annual automobile accidents. The problem is especially acute during the winter, when driving requires 100% of your focus. It's nerve-wracking enough without the distraction of cell phones, fiddling with the radio, or extraneous conversations with passengers. So, like the Car Talk bumper sticker says:

### Drive Now, Talk Later!

- **Keep Your Passengers Occupied.** Plan ahead for ways to keep your kids (or other passengers) occupied. The last thing you need to hear is whining and complaining. A portable audio player (with headphones so kids can listen to 'their' music) can be literally a lifesaver. Don't forget extra batteries. A pack of playing cards usually helps as well (but remember to include directions for some card games that are new to your children). Pencils and a drawing pad can also help to preserve your mental health. In our family, we find that listening to books on tape can make the hours pass quickly. Here are some other bits of 'common sense' advice to get you safely to your destination:
- **Stay Cool and Comfortable.** Wear comfortable clothing that doesn't restrict your movement. Dress warmly, in layers of relatively light clothing. But don't dress TOO warmly. You want to stay alert. If your passengers complain, tell them to bundle up instead.
- **Wear Sensible Shoes.** It's the winter. Why tempt fate by wearing fashionable shoes while driving? Comfortable driving shoes are much better for your back and you'll be less annoyed if you find yourself trudging through road slush. While you're thinking about it, go ahead and stash some boots or galoshes *inside* the vehicle for easy access when you need them.
- **Take Frequent Breaks.** This is important in order to remain fully alert (as discussed in the next section) but it's also an opportunity to:
  - **Change Drivers**
  - **Get in Line for the Bathrooms**
  - **Clear Off Accumulated Ice and Snow**
  - **Clean the Windows and Mirrors on the Outside**

- **Clean the Interior of the Windshield from Accumulated Grime**
  - **Refill the Windshield Washer Reservoir** (and buy an extra container of washing fluid while you're at it).
  - **Wipe Off the Wiper Blades**
  - **Clear the Heater Air Inlet** (the grill, located on the outside of the car, just below the windshield).
  - **Top Off Your Fuel Supply**
  - **Knock the Ice Out of the Wheel Wells**
  - **Check That the Exhaust Pipe is Clear**
  - **Clean the Headlights and Taillights.**
- **Be Mindful of Where You Park.** Try to avoid parking on hills (even for a short time) if the forecast calls for wintry precipitation. Remember to leave plenty of space around the vehicle to help you get out. Try to avoid parking in 'frost pockets'. These are low-lying areas that are more susceptible to frequent frost formation (which is why you should also avoid them when picking a spot for your spring garden).
- **Signal Your Intentions.** Give turn signals sooner than usual. Avoid the passing lane. Don't cut off other drivers (particularly trucks and SUV's – because they will have a harder time stopping to avoid hitting you). Pump your brakes lightly – or turn on your warning flashers - to warn of your intention to stop. Increase the distance between your vehicle and the car in front. Treat a non-working traffic light like a four-way stop. Always give emergency vehicles the right of way. By behaving in a courteous fashion you'll not only protect yourself, but help reduce stress for all concerned.

#### **NOT JUST FOR DOUBLE-PARKING AT THE DRY CLEANERS**

Most drivers only seem to toggle on their emergency flashers (sometimes referred to as 'flashers' or 'blinkers') when they intend to park illegally. I suspect this is mostly for 'effect' should a police officer happen by. Seasoned winter drivers understand that there are far more important uses for your emergency warning lights. You should immediately turn on the flashers whenever you come to an unexpected stop. This includes breakdowns as well as getting stuck in a rut. It also applies to a more common, and dangerous, circumstance: You've come to a sudden stop behind a line of traffic, but drivers further back - oblivious to the problem - continue to approach at high speed. This is also the time to turn on your flashers and to keep them operating until the risk of being rear-ended has passed. Also use your emergency flashers whenever you observe a problem further up the road that *may* cause you to slow down or stop. This is particularly important if you are traveling at highway speeds. Don't assume that the driver of a trailing vehicle is aware of the problem. Put them on notice with your flashers so that everyone has the chance to safely reduce speed.

- **Never Run a Traffic Light.** Even if you sometimes risk this maneuver when the weather is more agreeable. The odds of an accident go way up when everyone is having a hard time controlling their vehicles – and any resulting collision is likely to be a deadly side impact.

#### THE TWO SECOND RULE

While taking Driver's Ed (now more than thirty years ago) I was taught the 'car lengths' rule for spacing the distance between your vehicle and the one in front. I could never easily calculate the increasing number of car lengths which applied at higher speeds in order to maintain a safe separation. (For example, nine or more car lengths when traveling at 40 mph). Here's a simpler alternative. Watch the rear bumper of the car in front as it passes a sign, post or other landmark on the side of the ride. Now count two seconds (one thousand and one, one thousand and two). If your car passes the landmark before you finish counting, you're going too fast for you to safely stop (f the car in front slams on the brakes. During severe winter weather (and especially if you are driving an SUV) you should probably maintain at least three or even four seconds of separation. Try not to let the 'jerks' bother you. I am of course referring to those insensitive individuals who squeeze into your safety zone in order to arrive at their destinations a full second faster. It's painful to let this happen (and a clear affront to the norms of western civilization – not that I feel strongly on the subject). But better that it be *their* funeral than yours.

- **Wear Good Sunglasses.** The low winter sun can cause eye strain. The reflection of sunlight off of fresh crystalline snow can be so bright that there's a name for the resulting malady: snow blindness. You also need good sunglasses to protect against the effects of glare. So invest in the best pair of sunglasses you can afford, just for driving, and keep them in the vehicle at all times. What you wear as a fashion statement when you're "off duty" is up to you.
- **Stay Well Back From Snow Plows.** To combat slick roads, local governments apply not only salt, but sometimes sand (and even small pebbles or cinders) to increase traction for drivers. These pebbles and salt crystals can get kicked up and hit your windshield – possibly damaging the glass (as well as obscuring your visibility). Stay far back from plows and trucks and let them do their work.

#### BOMBS AWAY

You've seen those drivers on the road. Vehicles covered with snow an ice, navigating through a peephole, shedding wintry debris as they go along. Please stay far back from these inconsiderate drivers, and call 911 to alert the authorities. They might veer into you (since they e they are going). Or you could get bombarded by a sudden cascade of snow. If this happens, you'll be temporarily

blinded and your instincts will force you to veer away - with potentially disastrous consequences on a slick highway. There's also the potential for a chunk of heavy ice to crash into your windshield. At around 1.5 pounds per square foot, even an inch of compacted snow on the roof and trunk of a sedan weighs in at more than 50 pounds. The same volume of solid ice would weigh more than 170 pounds. A very good reason to stay well out of range of the typical tractor trailer rig. A 'load' of 1 inch thick ice, tumbling off the roof a semi-trailer, weighs in at more than 1,000 pounds. If you are fed up with drivers who bombard their fellow motorists with snow and ice, please visit [www.CenterForSafeDriving.org](http://www.CenterForSafeDriving.org). The Center tracks legislative initiatives and provides model laws that you can send to your local legislators.

- **Be Wary of Blind Spots.** Even if you are diligent about preparing your car for a drive, it's impossible to drive through the briny slush of a busy road without developing temporary blind spots on your windshield and side windows. Just imagine that a mom pushing a baby carriage (or a driver running the light) might be obscured by that blind spot. This will encourage you to drive cautiously and to clear your sight lines as soon as it is safe to do so.
- **When the Weather Turns Foggy.** Fog can occur under very different circumstances. Sometimes a cloud has literally descended to the roadway. While during the mid-winter thaw (or other transition seasons) fog can suddenly 'ascend' as the water molecules in melting snow flee into the air. Whatever the reason, slow down and use only your low-beams (or fog lights if your vehicle is so equipped). Be particularly wary of black ice (or icy spots hidden by snow or water on the road). If visibility really drops, just pull over.

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wracking challenge for even the most experienced motorists. The National Safety Council estimates that traffic death rates are three times as high at night as during the day. At night, your central vision, peripheral vision and peripheral vision are all compromised after sundown. In addition to all of the 'normal' challenges of winter driving, your eyes are straining due to the distorted glare from approaching headlights. What's worse, you can be blinded by the high beams of an approaching vehicle (and even the low beams of an SUV can have this effect). If this happens to you, don't stare transfixed. Look to the right side edge of the roadway and use the white pavement line to help guide you past the glare. Remember, it can take 5-10 seconds to recover your night vision. At 55 mph, this translates into 800 feet of travel before your vision is fully restored. Be cautious not to overdrive your own headlights, and remember to periodically clean off both the headlights and taillights of your vehicle. Snow, ice and dirt can reduce by 90% the reach of the beams. And please don't smoke while driving at night. The nicotine and carbon monoxide hamper night vision while

the smoke contributes to the buildup of grime on your windshield (resulting in glare).

- **Don't Drink and Drive.** The NHTSA estimates that alcohol is involved in 41 percent of fatal crashes. Drinking and driving at night is both suicidal and homicidal.
- **Wear Seat Belts.** Wild careening, breathless gyrations, sudden stops. Is this bumper cars? No, it's you struggling to control your vehicle on a treacherous curve. Seatbelts are a good idea for carnival rides and an even better idea for drivers (and passengers) regardless of the weather conditions. The NHTSA estimates that more than 14,000 lives were saved in 2002 alone by the use of safety belts.
- **Carbon Monoxide Poisoning.** Each year 1,500 people are killed in the U.S. by this odorless but poisonous gas (though not all these deaths occur while in an automobile). If your car's exhaust system is leaking, you can be overcome with little notice. Any car can become a deathtrap if the tailpipe is clogged by drifting snow (when, for example, you are stuck or have pulled over into the snow). Potholes can also rattle a connection loose. Old mufflers will begin to leak at some point. So, if you are feeling nausea, headache, dizziness or sudden drowsiness open the windows wide and investigate. The problem may be more than just the accumulated strain of winter driving.
- **Keep a Positive Attitude.** Driving during the winter can be intimidating, nerve wracking and even scary. By maintaining a positive attitude (even when everyone around you is 'losing it') you greatly increase your chances for not merely surviving the drive. You may actually enjoy yourself once you safely arrive at your destination.

## ***IV. The Road Trip Workout***

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Driving while tired is as dangerous as driving while intoxicated. One hundred thousand accidents occur each year as a result of drivers falling asleep.

This translates into 76,000 injuries and approximately 1,500 deaths – a preventable tragedy of immense proportions. Half of the drivers involved in these accidents slept less than 6 hours the night before. So try and get plenty of sleep before heading out and make sure to eat a

healthy meal. But don't overdo it or you'll become drowsy while your body digests. Keep high energy snacks on hand (you might want to open the snacks ahead of time so you won't have to fumble with wrappers if you're driving solo). If you do have a driving companion, make sure they understand that part of their 'job' is to monitor your level of alertness (as well as to swap driving responsibilities if appropriate).



Take frequent rest stops. A brisk walk around the parking lot and some deep breathing are good ways to revitalize. These activities will also help you to limber up your body (which can stiffen up from sitting in one position for too long, particularly given the strain of driving in bad weather). Your head, neck and back muscles in particular can become knotted.

Here are some exercises you can do - without leaving your vehicle - to help keep you alert and refreshed when it's too nasty to walk around outside. Try these while stuck in traffic (with the gearshift in park), or when pulled over safely on the side of the road. Of course, your passengers can do these exercises any time. They also work great when you find yourself sandwiched into an airline seat.

Consult your physician or health care provider for advice specific to your particular needs. Make sure to ask whether the exercises described in this section are appropriate for you.

- **The Eyes Have It.** Do your eyes water, your eyelids twitch, the part of your forehead around your eyebrows seems to ache and you notice a burning sensation when you close your eyes? You may be suffering from eye strain. It's a common affliction that can occur after the eyes are taxed from prolonged periods of driving. Here's what to do:

- **Blink and Yawn.** This helps to produce tears that moisten and lubricate the eyes.
  - **Palming.** Cup your hands over your eyes and let your weight fall forward. Now close your eyes and inhale slowly through the nose. Continue deep breathing for 30 seconds.
  - **Eye Stretches.** Close your eyes. Now slowly and gently move the eyes up towards the ceiling, then slowly down to the floor (while keeping your head stationary). Repeat 3 times and then move the eyes slowly from left to right (also repeating a few times).
  - **Focus Change.** Hold up your index finger a few inches in front of your nose. Focus on this finger as you slowly move the finger away until your arm is outstretched. Now focus into the far distance (outside of the vehicle) for a few seconds and then back to your outstretched finger. Slowly bring the finger back to within a few inches from the eye. Repeat three times.
  - **Take a Nap.** This is the best way to rest your eyes (and everything else as well).
- **Cleansing Breaths.** Open the car window at least a crack. Now shake yourself all around to limber up, and then let your arms hang limp. Take a deep breath, hold it for a little while, and then slowly exhale. Repeat, but this time purse your lips as if you were going to whistle. Start exhaling forcefully, little by little. The effort of the exhalation should be felt in the chest and the back.
  - **Overhead Pull.** Grasp the back of your neck with your right hand. Reach over and grab your right elbow with your left hand. Now gently tug on your elbow to give your right shoulder and side a nice stretch. Alternate until you feel loosened up on both sides of the body.
  - **Shoulder Bunch.** Sit up straight with your shoulders relaxed. Now bunch up your shoulders until they feel tight – hold for a few moments and then release. Continue a few times until your shoulders limber up.
  - **Head Roll.** Sit up straight with shoulders relaxed. Now drop your chin to your chest and start to gently roll your head around in wide circles. Alternate directions every so often until you feel the stiffness fall away.
  - **Do the Twist.** Place your hands in your lap. Cross your right ankle over your left (or cross your legs if you are able). Now gently twist your body to the right and look over your shoulder. Switch legs and twist in the opposite direction. You should feel a nice stretching sensation.

#### **GIVE YOUR BACK A BREAK**

If you have a bad back, then you know how important it is to avoid trouble. Compared to standing, there is almost twice as much pressure on your back when you are sitting incorrectly in the driver's

seat. According to one study, men who spend half or more of their work day behind the wheel are almost three times as likely to develop significant back problems. Here's what the experts recommend:

- ❖ Use a back support (lumbar roll) at the curve of your back.
- ❖ Your knees should be either at the same level or higher than your hips.
- ❖ Adjust the seat closer to the steering wheel. You need to support the curve of your back.
- ❖ You should be seated close enough to allow your knees to bend while your feet comfortably reach the pedals.
- ❖ Try to relax. A relaxed driving position will further reduce stress on the spine.
- ❖ Take regular breaks.
- ❖ Don't reach around to grab items in the back. Unload items off of the back seat only through the rear doors.
- ❖ Don't wear tight clothing while driving.

destination. Only wear comfortable shoes to drive in.

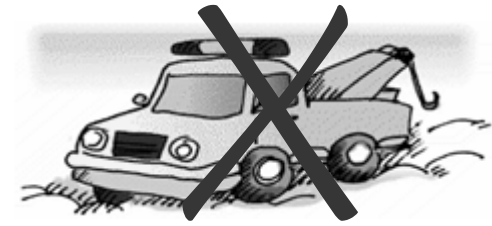
- ❖ Keep on hand a supply of the medications (including over-the-counter pain killers) that your physician recommends.
- ❖ If the worse kinds of physical exertion for back-sufferers. If you get stuck in a rut, call for assistance.

- **Reach Out.** Raise both arms in front of you, palms down, elevating the arms a little higher than your shoulders. Now reach forward – really stretch – then relax but don't drop your arms! Reach and relax, reach and relax. You can also try this exercise with your palms pointing upwards.
- **The Bear Hug.** With your right hand, grab your left side (just beneath the armpit) and wrap your other arm around on top. Now squeeze like you're giving yourself a hug and then repeat with the arm placement reversed.
- **Running in Place While Seated.** While in your seat, raise your legs up and down off the balls of your feet, alternating legs as if you were running.
- **Dance to the Music.** Put on some upbeat music and just dance in your seat – wiggling every which way to shake out the kinks. The kids will love this too.
- **Give yourself a round of applause.** Vigorous hand clapping will not only help to get the circulation going but will also provide a boost to your spirits! After all, you deserve recognition for safely navigating your vehicle.



## V. Are You Stuck In A Rut?

Getting stuck in the snow just comes with the territory of winter driving. It's important to learn how to free your vehicle without having to call for a tow. Anticipation is definitely worse than the reality IF you know what you're doing. Of course each circumstance is different. For purposes of this discussion we're assuming that the stuck vehicle is fully functional and hasn't slid down an embankment (requiring professional help). Here's what the pros recommend:



- **Try to Relax.** While it may have only taken a 'blink' to get into the current predicament, getting out will invariably take longer. Nothing you can do quickly at this juncture is likely to affect the outcome – except for the worse. Make sure everyone is O.K. Take some deep breaths and stretch to relieve your head, neck and back which may have knotted up as the mishap was unfolding. Now you're ready to think clearly about what to do next.
- **Assess the Situation.** After checking for traffic, carefully exit your vehicle to assess the situation. Each circumstance is unique, but generally you want to determine which wheels are stuck, how deeply, and whether you are dealing with snow or ice. Also, determine whether there are any other obstructions around or under the vehicle and whether you are on an incline (that can work for or against you). Is this going to be an easy or more time consuming task? If you decide that this qualifies as a 'breakdown' requiring external assistance, then proceed to the Section VI.
- **Reach Out.** Even if you've decided not to contact the police or call for a tow, take a moment to call ahead to alert your family, friends or colleagues to expect a delay in your arrival. This will reduce the pressure to do something precipitous. If you are in doubt as to whether you can free your vehicle, go ahead and call your auto club or a local service station. They are probably busy with others facing similar difficulties, so you might as well 'get in line'. You'll have plenty of time to call them back if you are able to manage on your own.
- **Consult Your Owner's Manual.** Whatever your manufacturer recommends should trump the advice we provide here (or that anyone else tries to give you). If, for example, the manual advises against a rocking maneuver, then don't do it.
- **Warn Other Drivers.** Turn on your emergency flashers. Depending upon where the mishap occurred, you will also need to deploy the Hazard Warning materials from your Winter Survival Kit. This can include erecting a reflective triangle and putting out a flare. You may also want to attach a distress flag (brightly colored cloth) to your vehicle. It's essential to warn other motorists if for example you are

partially blocking the roadway as they come around a blind curve. By communicating your difficulty you may attract a Good Samaritan who will help get you out of this fix (or at least provide moral support).

➤ **Determine What Needs to be Cleared of Snow.** You'll need to dig out some or all of the following. If you don't have a snow shovel, try using your hubcaps (which four people can share) or even your sun visors to clear the following:

- **The Drive Wheels.** If you are driving a front wheel drive car, then you'll need to clear a path in front of those tires to 'pull' you out. If your vehicle is 'pushed' by its rear wheels, then those are the tires to concentrate on. If you are driving a 4x4, follow the advice in your owner's manual. Also, clear a small space behind the appropriate tires to give you some running room if you need to rock the car.
- **Underneath the Vehicle.** You'll need to clear some snow from underneath your vehicle if you have ridden up on a mound of the white stuff. This isn't fun, but is absolutely necessary if you want to get free.
- **Clear a Path in Front of the Vehicle.** If you are some distance from the roadway, and the snow is deep, you'll need to clear a path the width of your car all the way to the asphalt. Otherwise, you'll be attempting to plow the snow with your bumper.

#### HOW TO

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❖ **Do exert.** Pace yourself and take frequent breaks to stretch your back and extremities. This is very hard work, and if you are in any doubt about your physical condition, use your cell phone to call for help rather than risking a heart attack. Remember that one shovelful of snow can weigh 20 pounds or more. The shovel of the Innovation Factory SnowMover™ is sized to prevent overdoing it when clearing snow from around the wheels of a vehicle.

❖ **No Sweat.** Add and remove layers of clothing as necessary to maintain a comfortable body temperature. Avoid sweating. This dramatically increases the risk of hypothermia because wet clothing conducts heat away from the body five times faster. Staying dry means staying alive.

❖ **Lift With Your Legs, Not Your Back.** The American Academy of Orthopedic Surgeons advises that you bend at the knees, not the waist or back, and lift with your legs. Scoop small amounts of snow into the shovel and walk to where you want to dump it. Don't hold a shovelful of snow with your arms outstretched – this puts too much weight on your spine. Dump the snow in front of you. But if you need to move the snow to the side, use your feet (rather than twisting).

❖ **Work at it Piecemeal.** Shoveling is like weight lifting. Never remove deep snow all at once; slice it like a cake. Shovel an inch or

two, then another inch and take a rest before continuing. Like they say about eating an elephant, you do it just one bite at a time.

- **Now, Add a Little Salt.** Sand, salt, kitty litter – whatever traction material you loaded into the trunk in preparation for winter driving. Spread this material in front of the drive tires and along the tracks they will follow to bring you back to the roadway. In a pinch, you can cut some branches to put under the wheels instead. Your floor mats will also work as a traction mat in front of the drive wheels (though they may be the worse for wear after the experience).
- **Release Some Pressure.** If the situation requires, try letting out some air from the drive wheels. This puts more tread on the road and can help a lot. If you deflate for traction, make sure to re-inflate as soon as possible.
- **It's Time to Rock.** Get back in the car, make sure everyone is belted in (or watching from a safe distance) and that the roadway you are aiming for is clear of traffic. It helps if you can recruit a volunteer to hold the traffic for you).
  - **Turn Your Front Wheels Back and Forth a Few Times.** This will help to push the snow out of the way.
  - **Now Straighten the Front Wheels.** And keep them that way until you've got enough speed and momentum to manage a turning maneuver.
  - **Don't Spin Your Wheels.** By this point, you are frustrated and tired. You just want to be on your way. Take your time and don't give in to the temptation of spinning your wheels. This accomplishes nothing (which is why we use wheel spinning as a metaphor). Spinning your wheels will only dig you in deeper while damaging your tires.
  - **Gently Shift From Forward to Reverse and Back Again.** Each time you're in gear, give the vehicle just a light touch of gas. You want to create a pendulum effect which will eventually rock you out of the rut with sufficient forward momentum for you to continue down the path to freedom. The trick is timing, and using as little power as possible, gaining a bit more ground each time until you eventually break free. Be mindful that rocking puts a lot of stress on the drive train and you risk thousands of dollars of damage if you go too heavy on the metal.
  - **Use the Highest Gear Possible.** As you begin to pull out. This technique applies less power to the drive wheels (which reduces the aforementioned wheel spinning).
  - **Slow and Easy.** Feed power gradually as you begin to pull out of the rut. Check for both oncoming and following traffic before re-entering the roadway.
- **Remember to Clean Up After Yourself.** Douse the flares and remember to return your warning triangle, shovel, floor mats -and any

stray passengers - back into the vehicle before your depart. Apologies may also be in order if you've left tire tracks in someone's front yard.



## **VI. If You Breakdown During a Storm**

Even good plans can go awry. The weather turns out worse than anyone expected and you find yourself detoured to the back of nowhere. Suddenly your car breaks down, or slides into a deep ditch. Or perhaps you find yourself in a blizzard and have no (prudent) choice but to pull over for the duration.



Worse things can happen – so long as your vehicle and Survival Kit are properly prepared (as detailed above). Now is when you'll be particularly glad to have topped off your fuel tank at the last rest stop – as we recommend doing anytime you're driving in winter weather. Here's what to do next:

- **Try to Relax.** Nothing you can do quickly at this juncture is likely to affect the outcome – except for the worse. DON'T PANIC. Make sure everyone is O.K. Take some deep breaths and stretch to relieve your head, neck and back which may have become knotted. Now you're ready to think clearly about what to do next.
- **Assess the Situation.** After checking for traffic, carefully exit your vehicle to assess the situation. Each circumstance is unique, but generally you'll want to determine if there is anything you can reasonably do to extricate yourself. Otherwise, you may be in for the long haul. Notice any mile markers, cross streets or other landmarks. You may need this information in summoning assistance.
- **Reach Out.** If the situation warrants, immediately contact the police and rescue services as well as your auto club. Then alert your family, friends or colleagues of your predicament. Make sure that other responsible people are aware of your situation and are doing what is required to be of assistance.
- **Warn Other Drivers.** Deploy the Hazard Warning materials from your Winter Survival Kit. This can include erecting a reflective triangle and putting out a flare. Tie a distress flag to the antennae (or wedge it into a window). It's essential to warn other motorists if for example you are partially blocking the roadway as they round a blind curve. Also, turn on your dome light and keep it on (during the night or while overcast) to help keep your vehicle visible to snow plows. Communicating your dilemma will also help to attract police and rescue personnel as well as Good Samaritans.
- **Signal for Help.** If the situation warrants, you may need to consider other means to signal potential rescuers. The international emergency sign for distress is three of any signal, followed by a substantial pause. Three blasts from your horn, a few seconds apart, may be your best option for attracting help if your vehicle isn't readily visible from a well-trafficked road. The sound can travel as much as a

mile downwind. If you are a licensed hunter, and are familiar with the appropriate safety practices and legal restrictions, you can also fire your weapon into the air to alert rescuers. Other options include blowing on the whistle (which is in your Kit) and even signaling with three flashes from the rear-view mirror (which you can remove from your vehicle).

#### **COLD & DEADLY**

Winter weather can be a joy if your body is properly 'fueled' and you are dry and dressed appropriately. Otherwise, exposure to the cold can be life-threatening. Here are some basics you need to know. Bear in mind that any specific medical conditions that you (or a family member) might have (such as circulatory diseases) can substantially increase your risks from exposure to cold weather. Take the time now to record your medical information in the space provided on the inside back cover of this booklet.

**Wind Chill.** Wind Chill is a calculation of how cold it feels outside when the effects of temperature and wind speed are combined. Put another way, wind chill relates to the rate of speed at which heat is lost (reducing the temperature of an object to that of its surroundings). So if, for example, the air temperature is 20° F, your body (or any object outside) will get is 20°. But with a wind blowing at even 15 mph (24 kph) exposed skin will freeze down as quickly as if it were just 6°F (-14°C) outside. The chart further below details how the wind can dramatically amplify the severity of exposure to the cold.

**Hypothermia.** This is the sudden and profound cooling of the temperature in the core of your body to below 95° Fahrenheit (35° Celsius). Basically, hypothermia occurs when the body loses more heat than it can generate. Continued cooling can result in an irregular heartbeat, leading to death.

- ❖ **Symptoms.** Include uncontrollable shivering, slow speech, memory lapses, stumbling, drowsiness and exhaustion.
- ❖ **Causes & Prevention.** Generally, Hypothermia is the result of being dressed improperly for winter conditions. The problem is made worse by wearing wet clothing which can conduct heat away from the body five times faster. Add and remove layers of clothing as necessary to maintain a comfortable body temperature. Heavy exertion, improper nutrition (or insufficient fluid intake) can lead to hypothermia even when temperatures are above freezing. Various factors may increase the risk of hypothermia, including chronic illness, circulation problems, being overly tired or under the influence of alcohol or other drugs. The very young and very old are particularly susceptible.

- ❖ person's trunk. Make sure to put them into dry clothes if at all possible (wet clothing can increase temperature loss by five

fold). Wrap the person in a blanket and use your own body heat to help warm them up. Arms and legs should be warmed last because stimulation of the limbs can drive cold blood toward the heart and lead to cardiac arrest. Rough handling of a person who is severely hypothermic can also cause cardiac arrest. If the person is conscious, provide warm liquids (soup is good) as well as high energy foods (like trail mix) to help stoke the body's internal furnace. Never give a hypothermia (or frostbite) victim something containing caffeine or alcohol. Tobacco and nicotine can also hasten the ill effects of cold body temperatures. It is essential to obtain prompt medical treatment for the person as soon as your party is rescued.

### **Fros**

frost



appearance in the fingers, toes, nose, ear lobes or any other exposed flesh. If the frostbite is more severe there may be blisters. There may also be a lack of sensitivity to the touch (though an aching pain may be felt). The first warning signals of frostbite are a 'pins and needles' sensation, followed by numbness.



**Causes & Prevention.** Various factors may increase the risk of frostbite, including smoking, alcohol use, fatigue, wet clothes and poor circulation (due to tight clothing, a cramped position or a medical condition). Frostbite can occur within as little as five minutes if the air temperature is bitter and the wind is brisk.



wet clothing. Also remove any constricting jewelry. If possible, immerse the affected areas in warm (but NEVER HOT) water of 104-108° Fahrenheit (40-42° Celsius). As the affected area begins to thaw, the flesh becomes red and very painful. DO NOT rub frozen flesh or forcibly remove gloves or shoes. DO NOT rub the affected area with snow. Refreezing of thawed parts can cause much greater damage than the initial injury, so no attempts at warming should be made until there is no danger of refreezing. If only the skin and surface tissues are affected, recovery can be complete as evidenced when the skin becomes soft and sensation returns. It is essential to obtain prompt medical treatment for the person as soon as your party is rescued.

- **Inventory Your Supplies.** What have you packed in your Winter Survival Kit? Consider each item and how it may be helpful given the circumstances.
- **Stay With Your Vehicle.** Do not leave the shelter of your vehicle unless help is visible within 100 yards. It's easy to become disoriented and lost when the snow is blowing and drifting. Even if the weather is clear, don't attempt to go for help except as a last resort

and only if you are properly dressed for the weather conditions. Consider tethering yourself to the vehicle (with rope from your Survival Kit) even when just going outside to clear the tail pipe and heater air inlet, prior to running the engine. You are more likely to be found by rescuers if you stay with your vehicle.

- **Prevent Dehydration.** Dehydration can easily happen during cold dry days (when humidity is extremely low). The colder the air, the less moisture it can hold. So make sure not to overexert and drink plenty of warm liquids.
- **Stay Awake.** If there is more than one person in the vehicle, try and take turns on watch. If you are alone, try your best to stay awake. If you fall asleep you may succumb to the effects of exposure.
- **Keep Warm and Dry.** Unless someone in your party is sick or injured, the real risk is from exposure to the elements, not starvation. Depending upon the severity of the circumstances, your life – and those of your passengers – could truly be in danger. Your focus should be on keeping everyone warm and dry. Here's some well tested advice:

- **Shut Out the Wind.** While you don't want your vehicle to be airtight, it's important to keep the interior as warm as possible. If you have a broken window that won't close, try using the floor mat to shut out the wind.
- **Bundle Up.** Put on all the clothing you have (but be careful not to overheat). You can also wrap yourself in the floor mats and newspapers as well as the blankets that are (hopefully) packed in your Survival Kit.
- **Huddle Together For Warmth.** This is also an effective way to quickly warm an individual who has become dangerously chilled.
- **Run the Engine Sparingly.** Even if you have a full tank of gas, don't take this resource for granted. You should run the vehicle engine for no more than ten minutes an hour with the heater going. But be sure to first clear the tail pipe, and open the windows a crack (to avoid carbon monoxide poisoning). You'll also want to clear the heater air inlet (the grill usually located just under the windshield on the outside of your vehicle). While the engine is running, turn on the radio to check the weather report. You should also take this opportunity to recharge your cell phone if needed. Don't let your engine run dry if you think you may need to resort to the 'extreme means' of keeping warm, discussed below. You'll need to save some gasoline as a starter.
- **Do the Road Trip Workout.** This will help keep up the circulation. Don't stay in one position for too long.
- **Drink Warm Liquids.** Take out the coffee can, candles and matches from your Survival Kit. Pour some water (or use snow if you've exhausted your water supply) into the container and use a lit candle to warm up the liquid. But be



careful, since the can will become quite hot. You can add some dry mix (soup, cocoa, whatever you brought) to make a meal. Make sure to open the windows a crack while the candle is burning (to supply enough oxygen both for the flame as well as the passengers).

- **For Extra Heat.** Burn the candle inside the coffee can while huddling under a coat or blanket.
- **Avoid Alcohol.** This will lower your body temperature and can make you drowsy – you could fall asleep and freeze to death.

➤ **Keeping Warm by Extreme Means**

The following suggestions should only be attempted after you've exhausted all the other 'reasonable' means to keep you and your party from freezing to death. There are significant risks associated with the following methods, including the potential for an uncontrolled fire or explosion as well as personal injury. Do not attempt without a fire extinguisher on hand. Only attempt in a well ventilated area out-of-doors. Keep the flames well away from your vehicle and any other flammable objects or structures.

- **Fire in a Hubcap.** Remove some oil from your engine. This might be accomplished using the siphon pump in your Kit. If you know how, you can also try draining the oil by carefully removing the drain plug from underneath the engine. Place the engine oil into a hubcap and ignite. This will generate heat as well as a smoke signal visible for miles. You can also use this oil fire to dry out twigs and branches sufficient to help you start a more conventional (and hopefully, sustainable) wood fire. Adding green boughs to the fire, preferably pine, will create extra smoke. If you have difficulty lighting the oil, use some of your paper towels as kindling or try adding some fuel line antifreeze (which is very flammable). Otherwise, carefully remove no more than a few spoonfuls of gasoline from your vehicle. This can be accomplished either by use of the siphon, or by wrapping a rag around a piece of mechanics wire and dunking this into the tank. Gasoline is extremely flammable – even its invisible vapors can be explosive. Try another type of kindling – such as paper towels – before resorting to gasoline. Never use gasoline as the main source of fuel for your fire – the resulting explosion will only keep you warm for a moment.
- **Hot Wheels.** A large component of any tire is oil; in fact a burning tire generates more energy (pound for pound) than coal. So take out your spare tire and release the air pressure. Use gasoline, oil or any other means available to set it ablaze. If necessary, remove your other tires and add

them to the blaze as well. You'll generate plenty of heat, and even more smoke to attract attention.



## Wind Chill Chart



		Temperature (°F)																		
		Calm	40	35	30	25	20	15	10	5	0	-5	-10	-15	-20	-25	-30	-35	-40	-45
Wind (mph)	5	36	31	25	19	13	7	1	-5	-11	-16	-22	-28	-34	-40	-46	-52	-57	-63	
	10	34	27	21	15	9	3	-4	-10	-16	-22	-28	-35	-41	-47	-53	-59	-66	-72	
	15	32	25	19	13	6	0	-7	-13	-19	-26	-32	-39	-45	-51	-58	-64	-71	-77	
	20	30	24	17	11	4	-2	-9	-15	-22	-29	-35	-42	-48	-55	-61	-68	-74	-81	
	25	29	23	16	9	3	-4	-11	-17	-24	-31	-37	-44	-51	-58	-64	-71	-78	-84	
	30	28	22	15	8	1	-5	-12	-19	-26	-33	-39	-46	-53	-60	-67	-73	-80	-87	
	35	28	21	14	7	0	-7	-14	-21	-27	-34	-41	-48	-55	-62	-69	-76	-82	-89	
	40	27	20	13	6	-1	-8	-15	-22	-29	-36	-43	-50	-57	-64	-71	-78	-84	-91	
	45	26	19	12	5	-2	-9	-16	-23	-30	-37	-44	-51	-58	-65	-72	-79	-86	-93	
	50	26	19	12	4	-3	-10	-17	-24	-31	-38	-45	-52	-60	-67	-74	-81	-88	-95	
	55	25	18	11	4	-3	-11	-18	-25	-32	-39	-46	-54	-61	-68	-75	-82	-89	-97	
	60	25	17	10	3	-4	-11	-19	-26	-33	-40	-48	-55	-62	-69	-76	-84	-91	-98	

Frostbite Times ☐ 30 minutes ☐ 10 minutes ☐ 5 minutes

$$\text{Wind Chill (°F)} = 35.74 + 0.6215T - 35.75(V^{0.16}) + 0.4275T(V^{0.16})$$

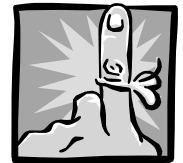
Where, T= Air Temperature (°F) V= Wind Speed (mph)

Effective 11/01/01

Courtesy of the National Weather Service

## The Fifteen Essential Habits of Safe Winter Drivers

There's a story, dating from the middle ages, about a wise Sage and an impatient King. One day, the King summoned the Sage to the palace and insisted that he impart to the King his wisdom – while standing on one foot! The Sage lifted up one leg and pronounced...



After more than 21,000 words, it's a daunting challenge (for me, anyway) to summon the 'most essential' bits to help keep you safe on the roads. But here we go, nonetheless, we the Fifteen Essential Habits of Safe Winter Driving:

1. **Go Slow in the Snow.** Tempers are frayed, traction is at a premium, it's hard to see and all the kids are complaining. Do

everything more slowly – including starting, stopping and turning. This will help you keep control of your vehicle. It will also reduce the damage to life and property should an accident occur.

2. **See And Be Seen.** Don't be a peephole driver. You need a full 360° of visibility, so clear all of your car windows and mirrors replenish your washer fluid and wipe off the wiper blades. While you're at it, clean off the headlights and taillights so that other people can see you as well.
3. **Get a Full Checkup.** Before the season starts, have a qualified mechanic perform each item of vehicle maintenance recommended by the manufacturer.
4. **Pack a Winter Survival Kit.** The essentials include:
  - o Warm clothing and a blanket.
  - o Cell phone with automotive charger.
  - o High energy snacks and water.
  - o Ice scraper, brush and snow shovel.
  - o Empty coffee can, filled with candles and matches.
  - o First aid kit, including non-prescription pain medications.
  - o Essential medicines prescribed by your doctor.
  - o Paper towels.
  - o Signaling devices, including a reflective triangle, whistle and a distress flag.
  - o Heavy duty flashlight (with plenty of spare batteries).
  - o Jumper cables.
  - o Pocket knife.
  - o Duct tape.
  - o Hammer and adjustable pliers.
  - o Tire gauge.
  - o Traction material such as sand, clay-type kitty litter or a traction mat.
  - o Games, puzzles or pack of playing cards.
5. **Tank Up.** Driving with a full tank of gas helps to prevent fuel line freeze-up and provides extra ballast in the rear of the vehicle. But most importantly, if you get stuck or break down, you'll have the fuel to operate your engine (though sparingly!) for a longer period. This could mean the difference between life – and freezing to death.
6. **The Road Trip Workout.** Driving while tired is just as dangerous as driving while intoxicated. Your head, neck, and back muscles can become knotted from the stress of driving in bad weather. Eye strain is also a serious problem. Take frequent rest stops. A brisk walk around the parking lot and some deep breathing are good ways to revitalize. If you're stuck in traffic, or it's too nasty to walk around outside, try the Road Trip Workout. These exercises, discussed in Section IV, can be done without leaving your seat.

7. **Beware 4WD Overconfidence.** Your SUV will absolutely get you going easier in the snow and ice. You're also more likely to survive if you crash into a smaller vehicle. But, on the other hand, SUV's are harder to handle and take longer to stop. While your vehicle-weight advantage works against you in a collision with a larger vehicle or immovable object like a bridge abutment.
8. **Steer Clear of Road Rage.** Be wary of those around you, winter can drive some people to their breaking point. One fourth of the drivers in a recent AAA survey admitted to becoming angry with other motorists. If you encounter such an individual, try not to make eye contact and move away by changing lanes or slowing down. Then call 911 before someone really gets hurt. Never indulge the road rage by trying to get even – you're more likely to get dead!
9. **Signal Your Intent.** Give turn signals sooner than usual. Avoid the passing lane. Don't cut off other drivers (particularly trucks and SUV's – because they will have a harder time stopping to avoid hitting you). If you have either stopped unexpectedly, or anticipate having to stop suddenly because of problem up ahead, alert the drivers behind you by toggling on your emergency flashers. By providing a 'heads up', you reduce the likelihood that trailing motorists will plow into your vehicle. Everyone knows 'a little courtesy won't kill you'. But when it comes to winter driving, an act of simple courtesy can save your own life.
10. **Observe the Two Second Rule.** Watch the rear bumper of the car in front as it passes a sign, post or other landmark on the side of the ride. Now count two seconds (one thousand and one, one thousand and two). If your car passes the landmark before you finish counting, you're going too fast for you to safely stop if the car in front slams on the brakes. During severe winter weather (and especially if you are driving an SUV) you should probably maintain at least three or even four seconds of separation.
11. **If You Start to Skid, Pick ONE Thing to Do.** Steering, braking and accelerating all demand their share of the scarce traction between your tires and the slippery road. By concentrating on just one thing at a time, you increase the chances of regaining control of your vehicle. Unless you have no choice, concentrate on steering first – and always steer INTO the direction of the skid regardless of what your instincts are demanding.
12. **Never Pump Antilock (ABS) Breaks.** If you need to make a panic stop, apply firm pressure to the break pedal and leave it there until you've come to full stop. Don't be put-off by the rumbling sounds, that's just the computer doing its job.
13. **Don't Sweat It.** Winter is different than the other seasons – it's cold! And when the wind is blowing, you can begin to freeze to death within minutes. Add and remove layers of clothing as necessary to maintain a comfortable body temperature. Don't

overexert (particularly if you need to shovel out your vehicle). Sweating dramatically increases the risk of hypothermia because wet clothes conduct heat away from the body five times faster. Staying dry means staying alive.

14. **Practice Makes Perfect.** Winter driving is very different from fair weather motoring. There's a lot to learn, and much of it goes against your untrained intuition. So you need to practice on the ice or snow in a big empty parking lot. During daylight hours, rehearse various maneuvers – slowly. Purposely steer into a skid, stomp on the brakes and then suddenly accelerate. Keep at it until safe winter driving becomes second nature. Get into the habit of testing the road conditions the first thing when you venture out in the morning. You don't want any unpleasant surprises.
15. **Just Say No!** Most winter driving accidents happen within the first few hours of a storm. The simplest way to avoid becoming a statistic is simply this: DON'T GO until the roads are cleared! While if you're suddenly caught in severe weather, have the courage to 'declare an emergency' and head for a safe haven. 'Loss of face' is nothing compared to loss of life.

**What did the Sage tell the impatient King?**

**“DO UNTO OTHERS AS YOU WOULD HAVE THEM DO UNTO YOU.”**

## ***Miracles Happen Every Day***

Congratulations, you've made it to the end. You're now ready to apply your newfound knowledge to safeguard yourself and all the rest of us who might 'bump' into you this winter.

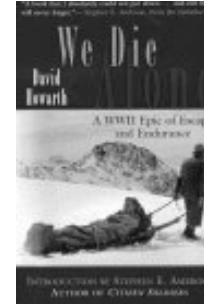
As a wise friend once observed, “If you don't start, it takes longer!” So the thing to do is to start doing. But first, why not pour yourself a nice cup of something warm? This will help put you in the right frame of mind for coping with winter.



Start by filling out the emergency information on the inside of the front and back covers. Make a checklist of supplies to lay in for your Winter Survival Kit. Don't forget to call for an appointment to have your car properly winterized.

Then, the first chance you get, please go out and begin to practice your winter driving skills. It's just like learning to dance or to play a musical instrument. Your body has to learn what to do automatically so that you'll respond safely when there's no time to think. It takes real work for safe

winter driving to become a habit. But oh, what a priceless feeling – when you ‘do the right thing’ in a winter driving emergency.



Ultimately, success starts with a positive, can-do attitude. Most of us (fortunately) never have to learn just what we’re capable of surviving. If you haven’t had the opportunity, try to watch the public television documentary, [Shackleton’s Antarctic Adventure](#). I also particularly recommend, [We Die Alone](#), a book by David Howarth. Both of these works depict human beings overcoming the ravages of winter in seemingly miraculous fashion. **But the real truth of these stories is that they demonstrate what ordinary people – like you and I – are capable of!**

So if you ever find yourself in a rough spot just remember: Miracles happen every day. Each of us has the ability to overcome far more than we might think possible. Maintain a confident attitude and you’ll find the inner strength when you most need it.

Respectfully,

Your Editor  
Marvin Weinberger

## Notes & Ideas

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# Additional Emergency Information

## PERSONAL

Names of Driver and All Family Members: \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_

Home Address: \_\_\_\_\_

\_\_\_\_\_  
Telephone: \_\_\_\_\_

## MEDICAL INFORMATION

Include special medical problems, as well as allergies and important medications, for each member of your family:

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Medical Insurer and Policy: \_\_\_\_\_

## VEHICLE INFORMATION

Vehicle Identifier (VIN): \_\_\_\_\_

Auto Insurer and Policy: \_\_\_\_\_

Tire Inflation (PSI): \_\_\_\_\_ Winter Lubricant: \_\_\_\_\_

Other \_\_\_\_\_

## WINTER SAFETY MAINTENANCE LOG

<u>Category</u>	<u>Dates Performed</u>
-----------------	------------------------

Winterize Vehicle	_____ _____ _____ _____
-------------------	----------------------------------

Replenish Survival Kit	_____ _____ _____ _____
------------------------	----------------------------------

Check Tire Pressure	_____ _____ _____ _____
---------------------	----------------------------------



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