

## Appendix A

Dr. Henry Nowicki reviewed Dr. David Cooney's studies on Feb. 19, 2015. Dr. Henry Nowicki concluded that Dr. Cooney's chemical adsorption by activated charcoal can be used to support the claims of Rx Destroyer.

The "Short List of Chemicals Adsorbed by Activated Charcoal" is taken from Dr. David Cooney's book entitled, "Activated Charcoal". The book contains a short history and technical review of activated charcoal in medical applications (80 pages).

Dr. Henry Nowicki reviewed Dr. David Cooney's studies on Feb. 19, 2015

The Rx Destroyer drug disposal device is formulated to quickly inactivate and adsorb medications to a harmless form. The free-floating molecules are adsorbed and neutralized by the activated charcoal, which is the main ingredient in the Rx Destroyer. As evidence that the Rx Destroyer adsorbs and neutralizes pharmaceuticals, we rely on the scientific studies performed by Dr. David Cooney on activated charcoal or activated carbon. Dr. Cooney was an author, researcher and professor at the University of Wyoming. His studies and books support the effectiveness of activated charcoal for adsorption of a wide variety of organic compounds.

In total, Dr. David Cooney has proven that some 4000+ chemicals, drugs, plant and microbial toxins, allergens, venoms and wastes are effectively neutralized by activated carbon.

### Short List of Chemicals Adsorbed by Activated Charcoal

Acetaminophen (Paracetamol)	Hexachlorophene	Quinidine
Aflatoxins	Imipramine	Quinine
Amphetamines	Iodine	Radioactive Substances
Antidepressants	Ipecac	Salicylamide
Antiepileptics	Isoniazid	Salicylates
Antipyrine	Kerosene	Secobarbital
Aspirin	Lead acetate	Selenium
Barbiturates	Malathion	Serax
Benzodiazepines	Mefenamic acid	Silver
Beta-blocking agents	Meprobame	Sinequan
Cantharides	Mercuric chloride	Sodium Salicylate
Camphor	Mercury	Sominex
Carbon dioxide	Methyl Salicylate	Stramonium
Chlordane	Methyl Salicylate	Strychnine
Chlorine	Miltown	Sulfonamides
Chloroquine	Morphine	Talwin
Chlorpromazine	Mucomyst	Tetracyclines
Cocaine	Muscarin	Tetrahydrocannabinol (THC)
Colchicine	Narcotics	Tin
Congesprin	Neguvon	Tofranil
Contac	Nicotine	Tree tobacco
Cyanides	Nortriptyline	Yew Valium
Dalmane	Nytol	Veratrine
Darvon	Opium	Warfarin/Superwarafins
DDT	Oxazepam	Many herbicides
Digitalis-Foxglove	Parathion	Tetanus toxin
Digoxin	Penicillin	Diphtheria toxin
Dilantin	Pentazocine	E. coli endotoxin
Diphenoxylates	Pentobarbital	
Elaterin	Phenylpropanolamine	
Ergotamine	Potassium cyanide	
Gasoline	Primaquine	
Glutethimide	Propantheline	
Golden Chain	Propoxyphene	
Hemlock	Quinacrine	

## Appendix B

**The information contained in Appendix B was reviewed by Dr. Henry Nowicki in Feb, 2015. Dr. Nowicki states in his memo to C2R Global dated Feb. 19, 2105, that the results of Dr. Bert McCarty's "Activated Charcoal For Pesticide Deactivation" report can be used to support the claims of Rx Destroyer.**

### ACTIVATED CHARCOAL FOR PESTICIDE DEACTIVATION

**Bert McCarty**

Activated charcoal (also called activated carbon) is often used to adsorb or deactivate organic chemicals such as pesticides. Activated charcoal has been used for many years to remove organic contaminants from waste waters and in water purification systems. Since most pesticides are organic chemicals, activated charcoal can effectively be used to deactivate or "tie up" these products in soil. Once the pesticide has been adsorbed onto activated charcoal, it is biologically inactive and cannot cause injury to the turfgrass. Therefore, this product can be beneficial to turfgrass managers in the case of an accidental pesticide spill or where a herbicide needs to be inactivated for seeding or sprigging of turfgrasses. Due to its dark color, thus ability to absorb heat, activated charcoal is also used to artificially warm the soil to minimize the effects of light frosts or to allow earlier seeding of an area.

Charcoal is porous, soft, black substance made by heating in an restricted amount of air, substances containing carbon such as material from hardwood trees and coconut shells. Powdered activated charcoal is made up of very small carbon particles that have a high affinity for organic chemicals such as pesticides. Activated charcoal has a large surface area and can absorb 100 to 200 times its own weight.

The amount of activated charcoal to apply to a pesticide-contaminated area varies with the chemical characteristics of the particular pesticide. Rates generally range from about 100 to 400 pounds of activated charcoal per acre (2.3 to 9.2 pounds per thousand square feet) for each pound of active ingredient of a pesticide applied per acre. A general rule is to apply about 200 pounds of activated charcoal per acre (4.6 pounds per thousand square feet) for each pound of pesticide active ingredient per acre.

#### **Rates of activated charcoal used for spills and deactivating turf pesticides.**

<b>Application</b>	<b>Recommendation</b>	<b>Comments</b>
Spills	For reducing the effects from spills of organic pesticides, some petroleum products, and hydraulic fluids.	Use 100 to 400 lbs of activated charcoal to every pound of active material spilled per acre (2.3 to 9.2 lbs/1000 ft <sup>2</sup> ). If the active material has not been diluted with water at the time of spill, apply the charcoal directly as a dry power. If the active material has been diluted with water, apply the activated charcoal in a slurry with a sprinkle can or common sprayer equipment. The charcoal must be incorporated into the contaminated soil, preferably to a depth of 6 inches. With severe spills, some of the contaminated soils may need removal prior to activated charcoal application.
'Deactivating' turf herbicides and soil warming	Turf areas that have been treated with preemergence herbicides can be reseeded earlier than normal by treating with activated charcoal.	Whenever it is desirable to terminate a preemergence herbicide, apply charcoal slurry at a rate of 2 to 4 lbs/1000 sq.ft. Water the slurry into the soil. Make sure the grass is washed free of heavy charcoal deposits. Where possible, it is desirable to rake the charcoal into the soil thoroughly. The area can be seeded 24 hrs after treatment.

*Example:* Suppose Balan 2.5G was inadvertently applied at 2 pounds of active ingredient per acre to an area to be seeded with a turfgrass. To completely inactivate this herbicide, an application of activated charcoal at 400 pounds per acre (or 9.2 pounds per 1000 square feet) would be needed. See the following table for additional conversions of rates per acre to pounds per 1000 square feet.

#### **Conversion from Pounds of Activated Charcoal Per Acre to Pounds of Activated Charcoal Per 1000 Square Feet.**

<b>Rate of Activated Charcoal (pounds per acre)</b>	<b>Activated Charcoal Needed (pounds per 1000 square feet)</b>
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100	2.3
200	4.6
400	9.2
800	18.4
1,600	36.7
3,200	73.5

Activated charcoal can be applied by various methods. It can be applied in the dry form with a drop spreader. However, activated charcoal particles are easily moved by wind, so it may be difficult to distribute the charcoal evenly when applied in the dry form. The easiest method is to suspend the charcoal in water and apply it by hand with a watering can (for small areas) or a power sprayer. Because activated charcoal does not mix easily with water, a 0.5 % solution of a nonionic surfactant (equivalent to 1 quart per 50 gallons) will enhance its suspension in water. Note that charcoal particles are very abrasive and can damage spray equipment (particularly rotary type pumps). Therefore, if a sprayer is used to apply activated charcoal, care should be taken to thoroughly clean the equipment when finished.

When deactivating a pesticide in a seedbed, the activated charcoal should be incorporated with a rotary tiller or other appropriate equipment so that the charcoal is placed in the upper few inches of soil. The objective is to get the activated charcoal in the same proximity as the pesticide. Uniform application of activated charcoal followed by thorough mixing is the key to inactivating a pesticide-contaminated area. If the pesticide is on the turf, in the thatch layer, or uppermost surface of the soil (for instance, if the pesticide has not been watered in), the pesticide can be inactivated by simply applying the charcoal to the area and thoroughly watering once charcoal application is complete. Again, the objective is to place the charcoal in the same proximity as the pesticide. If activated carbon is applied and either incorporated or watered correctly, inactivation of the pesticide will be successfully accomplished. For application convenience, it is recommended that activated charcoal be applied as a water slurry. To minimize dusting, always add activated charcoal to water slowly, keeping the bag as close to the water surface as possible. The following steps are suggested when mixing and applying charcoal.

#### **Spray Application**

1. Make sure spray equipment, tubing, and nozzles are completely clean. Screens should be removed if practical.
2. The final spray mixture should contain 1 to 2 lbs of charcoal per gallon of water.
3. Add sufficient water to begin moderate agitation. Simultaneously add the balance of required water and charcoal. Continue agitation until a uniform mixture is obtained.
4. Maintain moderate agitation while spraying.

It is important to understand situations where activated charcoal will not work. If a herbicide has been applied for several weeks and rainfall has occurred and/or irrigation water has been applied, the herbicide is most likely past the thatch layer and, depending on water solubility and soil adsorption of the herbicide, is probably in the upper inch or so in the soil. In this case, activated charcoal would have to be physically incorporated with a rotary tiller or other implement to get the charcoal in contact with the herbicide. The reason is activated charcoal will not leach through soil. If activated charcoal is applied to the soil surface and watered, the charcoal will remain on top of the soil and will not inactivate the herbicide below the soil surface. Activated charcoal is considered ineffective for inorganic pesticides such as arsenates, lead compounds, sodium chlorate, sulfur, borax, etc., and water-soluble organic pesticides such as, but not limited to, MSMA, and DSMA.

Activated carbon is available from most suppliers of turfgrass products. It is a good idea to keep several bags on hand so it can be applied immediately instead of having to wait for delivery. Several different brands and formulations are on the market. There appears to be little if any differences in effectiveness of the different brands. However, some may be easier to apply than others, depending on the particular situation where it is to be used.

#### **Suppliers of activated charcoal include:**

'Gro-Safe' from: American Norit Co., Inc. 1050 Crown Pointe Parkway Atlanta, GA 30338 1-800-641-9245	'Clean Carbon' from: Aquatrols 5 North Olney Ave. Cherry Hill, NJ 08003 1-800-257-7797
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'52 Pickup' from:  
Parkway Research Corp.  
13802 Chrisman Road  
Houston, TX 77039  
1-800-442-9821

'D-Tox' from:  
Cleary's Chemical Corporation  
178 Ridge Road  
Dayton, NJ 08810-1501  
800-524-1662  
[www.clearychemical.com](http://www.clearychemical.com)

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## Appendix C

Dr. Henry Nowicki, PACS, reviewed the information below entitled “Independent Activated Carbon Study”. He recommended that the test results can be applied to the activated carbon used in the Rx Destroyer and there is no need to recreate the study.

### Independent Activated Carbon Study:

In a recent literature search using PubMed (U.S. National library of Medicine/NIH) and the keywords of “activated” and “carbon”, over 21,000 publications were cited. Amongst numerous applications, activated carbon is used for removal of pharmaceutical impurities in water treatment processes, and in emergency treatments for deactivation of ingested drugs and other poisons.

In emergency medical treatments, administration of activated carbon is recommended for treating any chemical poisonings except those related to heavy metal (iron, lead, mercury), volatile, or corrosive agents [reference 10: Thakore S, Emergency Medical Journal, 2002, 19, 63-65].

<b>Comparison Test for Percent of Drug Deactivated</b>				
	Rx Destroyer	Coffee Grounds	Cat Litter	Sawdust
Generic Vicodin, 10/325	99.6	0	0	0
Generic Percocet, 5/325	100	5.3	0	0
Naproxen, 220 mg	99.4	0.9	0	0
Ibuprofen, 200 mg	94.3	0	0	0
Diphenhydramine, 25 mg	99.8	49.2	83.6	67.7
Dexamethasone, 4 mg	99.2	3.5	34.8	67.5
Amoxicillin, 250 mg	97.5	10.8	0	7.9
Effexor XR, 75 mg	98.9	38.8	87.4	59.3
Ketoprofen, 75 mg	99.9	35.6	23.6	47.2
Average	98.7	16.0	25.5	27.7
Standard Deviation	1.8	19.5	36.3	31.7

## Appendix D

**Dr. Henry Nowicki analyzed the results of this document on Feb. 19, 2014 and concluded that the activated carbon used in Rx Destroyer support the findings of this study.**

Independent studies show that >99.0% of the active ingredients listed below are adsorbed by activated carbon. Dr. Henry Nowicki analyzed the results and confirms that the activated carbon used in Rx Destroyer support the findings of this study.

<b>Medication</b>	<b>Active Ingredient</b> (mg/pill)
Duloxetine	30
Fluoxetine	10
Paracetamol	500
Simvastatin	20
Valsartan	80
Oxycodone	10
Ritalin	20
Cyclophosphamide	40
Dilantin	100
Hydrochloride	8
Lisinopril	40
Lorazepam	5
Metoprolol Tartrate	100
Morphine Sulfate	10
Codeine Phosphate	10
Fentanyl Transdermal	100
Demerol	100
Hydrocodone	7.5

Independent studies show that 97% - 98% of the active ingredients listed below are adsorbed by activated carbon.

<b>Medication</b>	<b>Active Ingredient</b> (mg/pill)
Buspirone	30
Diphenhydramine	25
Metoprolol tartrate	50