Pesticide Labeling

Chapter 3

National Pesticide Applicator Certification Core Manual
Pesticide Labeling

This module will help you:

- Understand the basis behind pesticide labels
- Read a pesticide label and understand names, ingredients, formulations, signal words, precaution statements, and environmental hazard statements
- Understand directions for mixing and loading, application, storage, and disposal
Labels and “Labeling”

- Pesticide users must comply with all label instructions!
- **Labeling** = the label itself, plus all other information referenced on the label or received from the manufacturer (brochures and leaflets)
The Environmental Protection Agency

- EPA reviews every pesticide product
- EPA may require labeling changes
- EPA must approve labeling language
What does it take to register a new pesticide??

Laboratory Screening

Laboratory and Field Testing

Label Registration

6+ years

Pesticide Product

millions
What happens before you see a pesticide label?

- Manufacturers conduct scientific tests
  - toxicity or toxicological tests
  - efficacy or performance tests
  - degradation (breakdown), mobility & residue
  - effects on non-target species and the environment
- EPA reviews the data and the label
Toxicity or Toxicological Tests

How poisonous or dangerous is a pesticide to humans, wildlife, and other non-target organisms?
Efficacy Tests

- Does the pesticide manage the pest?
- Does the pesticide cause plant damage - phytotoxicity?
Pesticide Testing

- Degradation, mobility, and residue tests
  - What happens to the pesticide after it is applied?
  - Does it move through soil to the groundwater?
  - Does it move into plants from the soil?
Crops or Animals for Food

- **Residue tolerance:** the maximum amount of pesticide residue legally allowed on or in food or feed at harvest or slaughter

- **Preharvest interval (PHI):** minimum number of days allowed between the last application and harvest
Pesticide Testing

- Effects on the environment
  - Wildlife
  - Groundwater
  - Surface water
Pesticide Registration

- Section 3 - standard registration
- Minimum-risk pesticides are exempted from registration under FIFRA Section 25 (b)
- Requested by states
  - Section 24 (c) - special local needs
  - Section 18 - emergency exemptions
Read the label before…

- Buying the pesticide
- Storing the pesticide
- Mixing and applying the pesticide
- Disposing of unused pesticide and empty containers
Trade, Brand, or Product Name

The brand name “PLANTGUARD 50W” indicates the registered trade name is PLANTGUARD, it is formulated as a wettable powder, and it contains 50% active ingredient.
Ingredient Statement

- **Active ingredients (ai):** chemicals responsible for pesticidal activity or perform desired function

- **Inert ingredients:** usually not named, but their percentage of total contents must be shown, have no pesticidal activity

### SEVIN
**COMPOSITION**

**Active Ingredients:** (% by weight)
- Carbaryl (1-naphthyl N-methylcarbamate) ......................................................... 20.0%

**Inert Ingredients** .................................................................................................. 80.0%

**Total:** .................................................................................................................. 100.0%
Chemical Name

identifies chemical components and structure of the active ingredient

Turf Care®
Turf and Ornamental Fungicide

Active Ingredient:
Chlorothalonil
(tetrachloroisophthalonitrile) . . . 82.5%
Other Ingredients: 17.5%
Total: 100.0%
(82.5% Water Dispersible Granules)

EPA Reg. No. 50534-202-100
EPA Est. 50534-TX-001
Common Name

- Short version of the chemical name

- **Examples:** carbaryl, imidacloprid, dichlobenil, glyphosate, 2,4-D, permethrin, chlorothalonil

- Purchase pesticides according to their common names!

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**Turf Care®**

**Turf and Ornamental Fungicide**

Active Ingredient: Chlorothalonil (tetrachloroisophthalonitrile) . . . 82.5%

Other Ingredients: 17.5%

Total: 100.0%

(82.5% Water Dispersible Granules)

EPA Reg. No. 50534-202-100
EPA Est. 50534-TX-001
Use Classification Statement

Restricted Use or Unclassified/General Use

RESTRICTED USE PESTICIDE

For retail sale to and use only by certified applicators or persons under their direct supervision and only for those uses covered by the certified applicator’s certification.
Use Classification Statement

- **Restricted-use pesticides**
  - potential to harm humans, non-target organisms or the environment
  - applicators must be certified and demonstrate competence

- **Unclassified or General-use pesticides**
  - typically have lower toxicity and can be used by the general public
Type of Pesticide

- Pesticides include:
  - **Insecticide** = insects
  - **Herbicide** = weeds, brush, trees
  - **Disinfectant** = germs

- Label indicates what the pests the product will control

Dogs include

Labrador Retrievers
German Shorthaired Pointers
Net Contents

- Each container states the total amount of product
- Expressed as pounds, ounces, gallons, pints, etc.
- Determine total active ingredient per container, use rate of active ingredient in container
  - Dry formulations: use % Ai
  - Liquids: use the lb Ai/gal equivalent on the label
### Lexone DF

- **Active Ingredient**
  - Metribuzin 25%
  - Inert Ingredients 75%
  - TOTAL 100%

- **Liquid Contents** 10 lbs

### Lexone 2E

- **Active Ingredient**
  - Metribuzin* 25%
  - Inert Ingredients 75%
  - TOTAL 100%

- **Liquid Contents** 2.5 gals

- * contains 2 lbs metribuzin per gallon
Required Label Information

- Name and address of manufacturer
- EPA registration number, except 25(b)
  - identifies manufacturer and specific product
- EPA establishment number
  - identifies the facility that produced the product
Signal Words and Symbols

- **Signal words** indicate the relative acute toxicity to humans and animals.
- Very low toxicity signal words not required.
- “Keep Out of Reach of Children”

<table>
<thead>
<tr>
<th>Danger-Poison</th>
<th>Warning</th>
</tr>
</thead>
<tbody>
<tr>
<td>Danger</td>
<td>Caution</td>
</tr>
</tbody>
</table>
Signal Words

DANGER - POISON

Highly toxic by any route of entry

PRECAUTIONARY STATEMENTS
HAZARDS TO HUMANS AND DOMESTIC ANIMALS
KEEP OUT OF REACH OF CHILDREN

DANGER-POISON

PELIGRO
Signal Words

DANGER

= can cause severe eye damage or skin irritation; 

not highly toxic if inhaled or swallowed

Causes irreversible eye damage.....
Turf Care®
Turf and Ornamental Fungicide

Active Ingredient:
Chlorothalonil (tetrachloroisophthalonitrile) . . . 82.5%
Other Ingredients: 17.5%
Total: 100.0%
(82.5% Water Dispersible Granules)
EPA Reg. No. 50534-202-100
EPA Est. 50534-TX-001

KEEP OUT OF REACH OF CHILDREN.
DANGER/PELIGRO

Si usted no entiende la etiqueta, busque a alguien para que se la explique a usted en detalle. (If you do not understand the label, find someone to explain it to you in detail.)

See additional precautionary statements and directions for use inside booklet.

SCP 50534-202A-L1A 0402
More Signal Words

WARNING
AVISO
= moderately toxic either orally, dermally, or by breathing, or may cause moderate eye and/or skin irritation

CAUTION
= slightly toxic either orally, dermally, or by breathing, or may cause slight eye and skin irritation
SAGA® WP INSECTICIDE

* FOR RESIDUAL CONTROL OF MAJOR NUISANCE PESTS
* ONLY FOR SALE, USE AND STORAGE BY PEST CONTROL OPERATORS
* DESIGNED FOR USE IN FOOD/FEED AND NON-FOOD/NON-FEED AREAS OF FOOD/FEED PROCESSING PLANTS.
* FOR USE IN USDA INSPECTED FACILITIES

ACTIVE INGREDIENT:
(1R, 3S) 3[(1RS) (1', 2', 2', 2'-tetramethyloxy)] -2, 2-dimethyl-cyclopropanecarboxylic acid (S)- alpha-cyano-3-phenoxymethyl ester

\[
\text{INERT INGREDIENTS:} \hspace{1cm} 60.00% \\
\text{Tralomethrin.} \hspace{1cm} 100.00%
\]

PRECAUCION AL CONSUMIDOR: Si usted no lee inglés, no use este producto hasta que la etiqueta le haya sido explicada amplamente.

(TO THE USER: If you cannot read English, do not use this product until the label has been fully explained to you.)

EPA REG. NO. 432-755

KEEP OUT OF REACH OF CHILDREN

WARNING

FIRST AID

If Swallowed:
• Call a poison control center or doctor immediately for treatment advice.
• Have person sip a glass of water if able to swallow.
• Do not induce vomiting unless told to by a poison control center or doctor.
• Do not give anything by mouth to an unconscious person.

If in Eyes:
• Hold eye open and rinse slowly and gently with water for 15-20 minutes.
Habitat®

Applications may only be made for the control of undesirable emergent and floating aquatic vegetation in and around standing and flowing water, including estuarine and marine sites. Applications may be made to control undesirable wetland, riparian and terrestrial vegetation growing in or around surface water when applications may result in inadvertent applications to surface water.

Active ingredient:
Isopropylamine salt of imazapyr (2-4-dihydro-4-methyl-4-(1-
methylethyl)-5-oxo-1H-imidazo[2,1-f]3-pyridinecarboxylic acid) ........................................... 28.7%
Inert ingredients .................................................................................................................. 71.3%
Total ................................................................................................................................ 100.0%
* Equivalent to 22.6% 2-4-dihydro-4-methyl-4-(1-methylethyl)-5-oxo-1H-imidazo[2,1-f]3-pyridinecarboxylic acid or 2 pounds a.i. per gallon.


KEEP OUT OF REACH OF CHILDREN. CAUTION/PRECAUCIÓN

Si usted no entiende lo que dice, busque a alguien para que se le explique a usted en detalle.
(If you do not understand the label, find someone to explain it to you in detail.)

In case of an emergency endangering life or property involving this product, call day or night, 800-832-HELP.
See Next Page for Additional Precautionary Statements

Net contents: ______ For more information, please visit our web site:

www.vmanwers.com

BASF Corporation
26 Davis Drive
Research Triangle Park, NC 27709
Choose the least toxic chemical that gives the desired level of control!
Precautionary Statements include...

- Routes of entry statements
  - “May be fatal if swallowed or inhaled”
- Specific action statements
  - “Avoid contact with skin or clothing”
- Protective clothing and equipment statements
HAZARDS TO HUMANS AND DOMESTIC ANIMALS
DANGER
Fatal if swallowed. May be fatal if inhaled. Harmful if absorbed through skin. Causes moderate eye irritation. Do not breathe dust or spray mist. Avoid contact with skin, eyes or clothing. Wash thoroughly with soap and water after handling and before eating, drinking or using tobacco. Remove contaminated clothing and wash clothing before reuse.

Personal Protective Equipment (PPE)

Mixers and loaders must wear:
- Long-sleeved shirt and long pants or coveralls worn over long-sleeved shirt and short (or long) pants.
- Chemical-resistant gloves (see "Material Note" below)
- Shoes plus socks
- Protective eyewear
- Chemical-resistant apron

Applicators:
Aerial applicators and ground applicators in fully enclosed cabs must wear:
- Long-sleeved shirt and long pants
- Shoes plus socks
Specific Action Statements:
many products are hazardous in more than one way--read carefully!

Causes irreversible eye damage. Wear goggles or face shield when handling. Harmful if swallowed, inhaled or absorbed through skin. Do not get in eyes, on skin or on clothing. Avoid breathing dust. Prolonged or frequently repeated skin contact with this product may cause allergic skin reactions in some individuals. Wash thoroughly with soap and water after handling.
Protective Clothing and Equipment (PPE)

• Follow all directions stated on the label!
• Lack of a statement does NOT mean you do not need further protection

PROTECTIVE CLOTHING REQUIREMENTS

When making applications, applicators must wear:
- a long-sleeved shirt, long pants, mid-forearm length protective gloves and protective boots. In addition, a protective apron and goggles or face shield must be worn during mixing/loading.
Other Precautionary Statements

- Remove and wash contaminated clothing...
- Not for use or storage in and around a house

Causes irreversible eye damage. Wear goggles or face shield when handling. Harmful if swallowed, inhaled or absorbed through skin. Do not get in eyes, on skin or on clothing. Avoid breathing dust. Prolonged or frequently repeated skin contact with this product may cause allergic skin reactions in some individuals. Wash thoroughly with soap and water after handling.
Statement of Practical Treatment

First-aid treatments for poisoning or accidental exposure

STATEMENT OF PRACTICAL TREATMENT

IF IN EYES: Hold eyelids open and flush with a steady stream of water for 15 minutes. Get medical attention.

IF SWALLOWED: Call a physician or Poison Control Center. Drink 1 or 2 glasses of water and induce vomiting by touching back of throat with finger, or if available, by administering syrup of Ipecac. Do not induce vomiting or give anything by mouth to an unconscious person.

IF INHALED: Remove victim to fresh air. If not breathing, give artificial respiration, preferably mouth-to-mouth. Get medical attention.

IF ON SKIN: Wash with plenty of soap and water. Get medical attention.
Statement of Practical Treatment

- Note to physician describing medical treatment for poisoning emergencies and may identify an antidote

- Have labels available in case of an emergency!
Environmental Hazard Statements

- Provides information on environmental impacts associated with the pesticide

**ENVIRONMENTAL HAZARDS**

This product is extremely toxic to aquatic and estuarine invertebrates. Do not contaminate water by cleaning equipment or disposal of wastes.

**BEE CAUTION: MAY KILL HONEYBEES IN SUBSTANTIAL NUMBERS.**

This product is highly toxic to bees exposed to direct treatment or residues on blooming crops or weeds. Do not apply this product or allow it to drift to blooming crops or weeds if bees are visiting the treatment area.
Physical or Chemical Hazards

- Describes any special, fire, explosive or chemical hazards
- **Flammable:** Do not use, pour, spill, or store near heat or open flame. Do not cut or weld container
- **Corrosive:** Store only in a corrosion-resistant tank

Hazard statements on labels are not necessarily located in same place!
Agricultural Use Requirements

- Required on products covered by WPS
- The **Worker Protection Standard (WPS)** requires training, notification, emergency assistance, protective equipment
- **Restricted-entry Interval (REI)**: the time that must pass between an application and the reentry of unprotected workers
Agricultural Use Requirements

- No agricultural employee can enter least 4 hours after the application. After 4 hours but before the REI has expired, early enter workers must wear PPE.

- Non-agricultural labels: No REI statement listed? Wait until sprays have dried or dusts have settled.
Agricultural Use Requirements

Use this product only in accordance with its labeling and with the Worker Protection Standard, 40 CFR part 170. This Standard contains requirements for the protection of agricultural workers on farms, forests, nurseries, and greenhouses, and handlers of agricultural pesticides.

It contains requirements for training, decontamination, notification, and emergency assistance. It also contains specific instructions and exceptions pertaining to the statements on this label about personal protective equipment (PPE) and restricted-entry interval. The requirements in this box only apply to uses of this product that are covered by the Worker Protection Standard.

Do not enter or allow worker entry into treated areas during the restricted entry interval (REI) of 4 hours.

PPE required for early entry to treated areas that is permitted under the Worker Protection Standard and that involves contact with anything that has been treated, such as plants, soil or water, is:

- Coveralls
- Waterproof gloves
- Socks and chemical-resistant footwear
Non-Agricultural Use Requirements

- Can be found on pesticide labels that have both Agricultural and non-Ag uses

**NON-AGRICULTURAL USE REQUIREMENTS**

The requirements in this box apply to uses of this product that are NOT within the scope of the Worker Protection Standard for agricultural pesticides (40 CFR Part 170). The WPS applies when this product is used to produce agricultural plants on farms, forests, nurseries, or greenhouses.

The area being treated must be vacated by unprotected persons.

Keep unprotected persons out of treated areas until sprays have dried.
Storage and Disposal

- Provides general instructions for storage and disposal of the pesticide and its container

**Storage and Disposal**

**Storage:** Store in a cool, dry, well-ventilated area, but not below 32°F.

**Pesticide Disposal:** Do not contaminate water, food or feed by storage or disposal. Pesticide wastes are toxic. Improper disposal of excess pesticide, spray mixture or rinsate is a violation of Federal law. If these wastes cannot be disposed of by use according to label instructions, contact your State Pesticide or Environmental Control Agency, or the Hazardous Waste representative at the nearest EPA regional office for guidance.

**Container Disposal:** Triple rinse (or equivalent). Then puncture and dispose of in a sanitary landfill, by incineration or, if allowed by State and local authorities, by burning. If burned stay out of smoke.
Directions for Use

Instructions on how to use the product

- Will tell you:
  - Crops or sites intended for protection
  - Pests the manufacturer claims the product will control
  - How to mix and apply the product
  - Phytotoxicity and other effects
  - How to minimize drift
DIRECTIONS FOR USE:

It is a violation of Federal Law to use this product in a manner inconsistent with its labeling.

1. Simply place each bait station indoors or outdoors immediately next to ant trails or in areas where ants are numerous. Nests are usually located in dark, humid and warm areas near a water and food source. For maximum effectiveness in ant control the bait station should be placed in or near wall voids, electrical outlets (if wiring permits), potted plants, waste baskets, garbage cans and sinks.

Bait stations can be placed in cabinets, next to food and dishes, near sensitive equipment, or where your ant problem occurs.

2. Indoor Use: For normal infestations, you should use 3 MAXFORCE® Ant Killer bait stations in an average size room. For heavier infestations, you will need additional bait stations in each room. If infestation persists beyond two weeks, replace all bait stations where the bait has been consumed and relocate bait stations that show no evidence of ant feeding.

3. Outdoor Use: Bait stations should be placed near ant activity or anywhere ants may gain access to the structure. Application sites include air conditioning units, electrical conduits, vent chases, concrete slabs, skylights on roofs; around ant mounds, garbage cans, and tree wells, window sills, sidewalks and driveways; on ground around structure.

4. The bait stations can be stuck to a vertical surface by peeling off the bottom label to release the adhesive.

5. Do not spray the bait stations. Avoid placing the bait stations on freshly sprayed surfaces.

6. Increased ant activity may be seen near the bait stations immediately after placement. This may last for several days but you can expect to see less activity within one week. After placement, ant traffic may be observed between the bait stations and the nests. For best results do not interfere with the stations during their use because ants must carry the bait back to destroy their nests and colony.

7. Inspect all bait stations and replace as needed for continuous control of ants.

TOTAL NET WEIGHT
1.27 oz. (36 g.)
Preharvest Interval (PHI)

= minimum number of days that must pass before harvest

❖ set by EPA to allow time for the pesticide to break down on or in the crop
Examples of Misuse:

- Applying to a site not stated on the label
- Applying at a higher-than-labeled rate
- Mishandling (such as storing near food or water)

KNOW YOUR PESTICIDE LABEL!
FOLLOW THE LABEL!
Remember…

- The host or site must be on the label, but the pest does not have to be listed.

- Deviation: Any application method may be used: air, ground, rope-wick
  - except chemigation. To chemigate the label must state chemigation.
Remember...

- **Deviation**: A pesticide may be applied at a lower dose than specified on the label, *but not at a higher dose!*

- **Deviation**: Pesticides may be combined with other substances *unless prohibited by the label.*

### Crop Use Recommendations

<table>
<thead>
<tr>
<th>Insects Controlled</th>
<th>Rate of Application</th>
<th>Method of Application</th>
</tr>
</thead>
<tbody>
<tr>
<td>For control of Grasshoppers</td>
<td>¼ to ½ pint per acre</td>
<td>Apply as a foliar spray when insect populations and/or damage reaches economic thresholds, refer to Cooperative Extension Pest Management Guidelines. Minimum gallonage requirements. Ten gallons of finished spray per acre with ground equipment, two gallons per acre with aircraft.</td>
</tr>
<tr>
<td>For control of Alfalfa Biotic Leafminer and Potato Leafhopper</td>
<td>1 to 2 pints per acre</td>
<td></td>
</tr>
<tr>
<td>For control of Blue Alfalfa Aphid (nymphs and wingless adults)</td>
<td>½ to 1 pint per acre</td>
<td>Apply as a foliar spray when insect populations and/or damage reaches economic thresholds, refer to Cooperative Extension Pest Management Guidelines. Use 30 gallons of finished spray per acre with ground equipment, 5 gallons per acre with aircraft.</td>
</tr>
</tbody>
</table>

### TANK MIX COMBINATIONS

Combination with other herbicides broadens the spectrum of weeds controlled. In addition, total vegetation control can be achieved with higher rates of LANDMARK™ MP plus residual type companion herbicides. To improve postemergence control of weeds, add surfactant at 0.25% by volume or at the manufacturer's recommended rate based on spray area.

LANDMARK™ MP may be applied with the recommended rates of other herbicides registered for this use. For application method and other use specifications, use the most restrictive directions for the intended combination.

Do not tank mix LANDMARK™ MP with DuPont™ HYVAR® X-L herbicide.
Material Safety Data Sheets (MSDS)

- Manufacturers required to develop and provide upon request for each product
- Get from your dealer
- Details a product’s composition, properties, hazards, first-aid procedures
- Companies required to keep MSDS for workers in contact with the substance
Parts of MSDS

- Chemical product information (active and inert ingredients)
- Physical and chemical properties
  - Solubility, vapor pressure, stability, freezing/boiling point
- Fire and explosion hazards
- Toxicological Information/ Human Health Data
  - Acute, chronic, and delayed toxicity, carcinogenicity, teratogenicity
- Personal Protective equipment
- Other information – similar to pesticide label
MATERIAL SAFETY DATA SHEET

Agricultural Products Group
P.O.Box 13528,
Research Triangle Park, NC 27709
(919) 547-2000

Product No.: 579609  
Arsenal® railroad herbicide

Date Prepared: 6/13/2000  
Date Revised: 6/24/2002

SECTION I

Trade Name:  
Arsenal® railroad herbicide

Chemical Name:  
2-[4,5-dihydro-4-methyl-4-(1-methylethyl)-5-oxo-1H-imidazol-2-yl]-3-pyridinecarboxylic acid, salt with 2-propanamine (1:1)

Synonyms:  
Isopropylamine of imazapyr; AC252, 925

Formula:  
C(13)H(15)N(3)O(3).C(3)H(9)N

Chemical Family:  
Imidazolinone

Mol Wt:  
320.4

SECTION II - INGREDIENTS

<table>
<thead>
<tr>
<th>COMPONENT</th>
<th>CAS NO.</th>
<th>%</th>
<th>PEL/TLV - SOURCE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Isopropylamine salt of Imazapyr</td>
<td>81510-83-0</td>
<td>27.6</td>
<td>0.5 mg/m3 TWA BASF recommended</td>
</tr>
<tr>
<td>Inerts</td>
<td>N/A</td>
<td>72.4</td>
<td>None established</td>
</tr>
</tbody>
</table>

SARA Title III Section 313:  
Not Listed

SECTION III - PHYSICAL DATA

BOILING/MELTING POINT@760mm Hg:  
N/D  
pH:  6 - 7.5

VAPOR PRESSURE mmHg @ 20°C:  
N/D

SPECIFIC GRAVITY OR BULK DENSITY:  
1.06 - 1.09 g/mL

SOLUBILITY IN WATER:  
Miscible

APPEARANCE:  
Pale yellow to dark green liquid

ODOR:  
Ammonia

INTENSITY:  
Slight

SECTION IV - FIRE AND EXPLOSION DATA

FLASH POINT (TEST METHOD):  
>210 °F SFCC  
AUTOIGNITION TEMP:  
> 200° F

FLAMMABILITY LIMITS IN AIR (% BY VOL):  
LOWER: N/D  
UPPER: N/D

NFPA 704 HAZARD CODES

HEALTH: 1  
FLAMMABLE: 1  
INSTABILITY: 0  
OTHER: N/R
CHAPTER 3

Summary

❖ Follow label directions carefully!
❖ Read the label before buying, mixing, applying, storage, and disposal
❖ Be familiar with names, signal words, symbols
❖ Know the use instructions & precautions
❖ Protect yourself beyond the label requirements
❖ It’s the applicator’s responsibility!
Q1. Which of the following is an allowable deviation from the label?

1. applying at a greater application rate
2. applying at a greater dilution
3. tank mixing pesticide with a fertilizer
4. using chemigation, even it is not specified on the label

A. 1 and 2 only  
B. 1 and 3 only  
C. 2 and 3 only  
D. 2 and 4 only
Q2. Pesticides that have high acute toxicity and cause corrosive eye damage would display which of the following signal words?

A. Danger-Poison *Peligro* with a skull and crossbones symbol
B. Danger *Peligro*
C. Warning *Aviso*
D. Caution
Q3. Which of the following are examples of “Precautionary Statements Hazards to Humans and Domestic Animals”?

1. Fatal if swallowed
2. Poisonous if inhaled
3. Causes skin and eye irritation
4. This product is highly toxic to bees

A. 1 only
B. 1 and 2 only
C. 1, 2, and 3 only
D. 1, 2, 3, and 4
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Acknowledgements

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