NEBRASKA RECYCLING COUNCIL

GLOSSARY OF WASTE & RECYCLING TERMS

The solid waste, recycling, and compost industries have their own jargon that can be confusing to the outsider. Nebraska Recycling Council offers this lexicon as a guide to the terms that may arise in community solid waste discussions.

Table of Contents

Topic **Page**

What are the different types of waste, recycling, and organics streams? 2

General Solid Waste Terminology 2

Recycling Terminology 4

Organics/Composting Terminology 6

What are the different types of waste containers? 11

What are the different types of collection vehicles? 12

What types of equipment are used at recycling processing facilities? 12

What are the different types of municipal solid waste collection models? 14

What are the different types of municipal recycling collection models? 15

What is a municipal solid waste landfill and how does it work? 15

Where can materials be collected for reuse or processed to conserve resources? 18

What environmental regulations apply to landfills and other waste processing facilities? 18

Environmental Terms 20

Abbreviations & Acronyms 23

WHAT ARE THE DIFFERENT TYPES OF WASTE, RECYCLING, AND ORGANICS STREAMS?

Materials that our society disposes of are not just trash. They are made up of many different waste materials, from materials that can be recycled, like plastic, paper, metals, and glass, to organics that can be composted, and more. Each of these broad waste categories can be broken down into sub-categories.

GENERAL SOLID WASTE TERMINOLOGY

Bulky Waste: Large items of waste materials, such as appliances, furniture, large auto parts, trees, stumps.

Commercial Waste: All solid waste emanating from business establishments such as stores, markets, office buildings, restaurants, shopping centers, theaters and apartment complexes.

Construction and Demolition (C&D) Waste: Debris generated during the construction, renovation or demolition of buildings, roads, and bridges. These waste materials are generally bulky, heavy and produced in large quantities. Some examples of C&D waste include, but are not limited to, concrete, rebar, wood, paneling, linoleum, and carpet.

> **Clean Wood:** Any wood which is derived from such products as pallets, skids, spools, packaging materials, bulky wood waste, or scraps from newly built wood products, provided such wood is not treated wood, painted or engineered lumber.
>
> **Treated Wood:** Wood which contains an adhesive, paint, stain, fire retardant, pesticide or preservative.

Cubic Yard: A unit of measure equivalent to 27 cubic feet, 22 bushels or 202 gallons. A box that is I yard wide, I yard long, and I yard high has a volume of I cubic yard. A cubic yard is often loosely referred to as a "yard" (for example, a one-yard bucket).

Density: Weight per unit of volume – food is heavy/dense.

Electronic or E-Waste: Waste that consists of electronic products nearing the end of their useful life. Many e-waste products can be reused, refurbished or recycled, and often, governments mandate that e-waste be recycled rather than sent to landfill.

Hazardous Waste: Waste that poses substantial or potential threats to public health or the environment and consists of four key traits: ignitability, reactivity, corrosivity, and toxicity.

Household, Residential, or Domestic Waste: Solid waste, composed of garbage and rubbish generated in single and multi-family homes, including newspapers, clothing, disposable tableware,

food packaging, cans, bottles, food scraps, and yard trimmings other than those that are diverted to backyard composting. Domestic waste may contain a significant amount of toxic or hazardous waste.

Industrial Waste: Unwanted materials from an industrial operation; may be liquid, sludge, solid, or hazardous waste.

Institutional Waste: Waste generated at institutions such as schools, libraries, hospitals, prisons, etc.

Integrated Waste Management: Using a variety of practices to handle municipal solid waste; can include source reduction, recycling, recovery, incineration, and landfilling.

Medical Waste: Potentially infectious waste materials generated at health care facilities, such as hospitals, clinics, physicians' offices, dental practices, blood banks, and veterinary hospitals/clinics, as well as medical research facilities and laboratories.

Municipal Solid Waste (MSW): Commonly known as trash or garbage, consists of everyday items discarded by the public and businesses, many of which could be recycled, including durable goods, non-durable goods, containers and packaging and other waste.

Post-Consumer Waste: Discarded items and materials used by consumers, often collected from homes and businesses.

Pre-Consumer or Post-Industrial Waste: Discarded items or materials generated during manufacturing but not yet used by consumers, such as damaged or obsolete products, overruns, and trimmings.

Pull Charge: Charge for removing or emptying a dumpster.

Red Bag Waste: Medical refuse, including potentially infectious materials and other hazardous products, that is placed in special containers to prevent them from contaminating the environment or spreading disease.

> **Sharps:** Hypodermic needles, syringes (with or without the attached needle), Pasteur pipettes, scalpel blades, blood vials, needles with attached tubing, and culture dishes used in animal or human patient care or treatment, or in medical, research or industrial laboratories. Also included are other types of broken or unbroken glassware that were in contact with infectious agents, such as used slides and cover slips, and unused hypodermic and suture needles, syringes, and scalpel blades.

Rental Fee: Cost of using a dumpster for a specific period of time.

Special Waste: Any waste that requires special handling. Special waste is non-hazardous waste generally from an industrial generator and must be profiled to ensure that it does not contain elevated levels of potentially hazardous chemicals or materials.

Tons: A common measurement of weight of solid waste = 2,000 lbs.

Universal Waste: A special category of hazardous waste that generally includes fluorescent lamps, cathode ray tubes, mercury, or batteries.

Used Oil: Spent motor oil from passenger cars and trucks collected at specified locations for recycling.

Volume Reduction: Processing waste materials to decrease the amount of space they occupy, usually by compacting, shredding, incineration, or composting.

Waste Generation: The weight or volume of materials and products that enter the waste stream before recycling, composting, landfilling, or combustion takes place. Also, can represent the amount of waste generated by a given source or category of sources.

Waste: Unwanted materials left over as a result of human habitation or manufacturing and production processes.

Waste Stream: The total flow of solid waste from homes, businesses, institutions and manufacturing plants that is recycled, burned or disposed of in landfills, often broken into different waste stream types.

Waste Characterization: A process of identifying various waste materials that make up a waste stream, often including the chemical and microbiological constituents of waste materials.

RECYCLING TERMINOLOGY

Bale: A compressed and bound cube of recycled materials, such as paper fiber, scrap metal, plastics, etc.

Chemical Recycling: Also known as feedstock recycling, is the process which breaks down waste plastic polymers into their chemical constituents and converts them into a variety of useful products like basic chemicals and/or polymers for new plastics, downstream industrial processes or as transportation fuels.

Contamination: When incorrect items/materials are put into the system or when the right items/materials are prepared the wrong way (i.e., food residue in containers, recyclables in plastic bags, etc.).

Corrugated Cardboard: Cardboard with corrugations (can be glued to flat cardboard on one or both sides).

Degradable Plastic: A plastic designed to undergo a significant change in its chemical structure under specific environmental conditions.

Ferrous Metals: Magnetic metals derived from iron or steel; products made from ferrous metals include appliances, furniture, containers, and packaging like steel drums and barrels.

Glass Containers: For recycling purposes, containers like bottles and jars for drinks, food, cosmetics and other products. When being recycled, container glass is generally separated into color categories for conversion into new containers, construction materials or fiberglass insulation.

Glass Cullet: Broken or waste glass suitable for re-melting.

Mandatory Recycling: Programs which by law require consumers to separate trash so that some or all recyclable materials are recovered for recycling rather than going to landfills or incinerators.

Mixed Glass: Recovered container glass not sorted into categories.

Mixed Paper: Recovered paper not sorted into categories such as old magazines, old newspapers, old corrugated boxes, etc.

Non-Ferrous Metals: Nonmagnetic metals such as aluminum, lead, and copper. Products made all or in part from such metals include containers, packaging, appliances, furniture, electronic equipment and aluminum foil.

Old Corrugated Containers (OCC): Material often referred to as cardboard, including boxes, containers or other packaging made from unbleached, un-waxed paper with a ruffled, or corrugated, inner liner.

Pulp: The solution resulting from blending wood, recovered paper, or in some cases, cotton with water to break it down into individual cellulose fibers. This is the fibrous material used to make paper.

Recovered Material: Materials and byproducts that have known recycling potential, and that have been removed or diverted from solid waste, and are intended for sale, use, reuse, or recycling.

Recycle/Recycling: The series of activities by which discarded materials are collected, sorted, processed, and converted into raw materials and used in the production of new products.

Recyclable(s)/Recyclable Materials: Discarded materials that can be collected, sorted, processed, and then used as raw materials in the production of new products. "New products" do not include materials that are used as fuel substitutes or for energy production.

Recycled-content: Products made from materials that would otherwise have been discarded. These products are made totally or partially from material contained in the products that have been recycled, like aluminum cans or newspaper. Recycled-content products also can be items that are rebuilt or re-manufactured from used products such as toner cartridges or computers.

Recycled Fiber: Fiber derived from recovered paper that is processed into a product or a form usable in the manufacture of a product.

Resin Identification Code (RIC): A number-based coding system placed on plastics to identify the polymer for purposes of recycling. Plastic products produce toxic fumes when burned.

#1 – Polyethylene Terephthalate (PET) This is a type of plastic commonly used in water

bottles, blister packs, and clear food packaging.

#2 – High-density Polyethylene (HDPE) This is a type of higher-melting plastic that is used in milk jugs, cleaning solution bottles, trigger bottles, etc.

#3 – Polyvinyl Chloride (PVC) This type of plastic is used in the white pipes/tubes that most modern plumbing is made with.

#4 – Low-density Polyethylene (LDPE) This is a type of lower-melting plastic used in shopping bags and some stretch wrap.

#5 – Polypropylene (PP) This is a type of lower-melting plastic used in shopping bags and some stretch wrap.

#6 – Polystyrene (PS) This plastic is used to make Styrofoam food containers, disposable dining utensils, and yogurt containers.

#7 – Other (mixed plastic) This category refers to everything else that does not fall into the previous six, or a combination of any of the previous items used together in a single product. Some other types of plastics that fall into this category are:

ABS – This polymer is often used to make the rigid plastic housings for electronics, remotes, toys, and more.

PA (Nylon) – This plastic is often used in fabrics, plastic zip or cable ties, and other industrial parts.

Scrap: Materials discarded from manufacturing operations that may be suitable for reprocessing.

Sorted Office Paper: A mix of papers collected for recycling that includes white and pastel copy and writing paper; white, green-bar, and multi-stripe computer paper; letterhead and envelopes; notepads; advertising booklets, and fliers.

ORGANICS/COMPOSTING TERMINOLOGY

Actinomycete: A group of microorganisms, intermediate between bacteria and true fungi, that usually produce a characteristic branched mycelium. These organisms are responsible for the earthy smell of compost.

Aerated Static Pile Composting System: Process in which decomposing organic material is placed in piles over an air supply system that can be used to supply oxygen and control temperature for the purpose of producing compost. Piles must be insulated to assure that all parts of the decomposing material reach and maintain temperatures at or above 55°C for a minimum of 3 days.

Aeration: Bringing about the contact of compost with air through turning or ventilating to allow

microbial aerobic metabolism.

Aerobic: Occurring in the presence of oxygen. For successful composting, sufficient oxygen should be provided to keep the system aerobic. This ensures that the composting proceeds rapidly and with minimal odor.

Agricultural Residuals: Poultry and livestock manure, and residual materials in liquid or solid form generated from the production and marketing of poultry, livestock or fur-bearing animals; also includes grain, vegetable, and fruit harvest residue.

Anaerobic: Occurring in the absence of oxygen. Anaerobic composting proceeds slowly and is odiferous.

Bin composting: A composting technique in which mixtures of materials are composted in simple structures (bins) rather than freestanding piles. Bins are considered a form of in-vessel composting, but they are usually not totally enclosed. Many composting bins include a means of forced aeration.

Biodegradability: The potential of an organic substance to be broken down into simpler compounds or molecules through the action of microorganisms.

Biosolids: Solids derived from primary, secondary or advanced treatment of sanitary wastewater that have been treated through one or more controlled processes that significantly reduce pathogens and reduce volatile solids or chemically stabilize solids to the extent that they do not attract vectors.

Browns: The term "browns" is used to denote organic materials high in carbon, more specifically, materials whose carbon to nitrogen ratio is higher than 30:1. (Materials high in nitrogen are referred to as "greens"). Achieving a carbon-to-nitrogen ratio of about 30:1 is one factor in creating favorable conditions for backyard pile composting.

Bulk Density: The mass of a unit volume of soil, generally expressed in gm/cm3. The volume includes both solids and pores. Thus, soils that are light and porous will have low bulk densities, while heavy or compact soils will have high bulk densities.

Bulking Agent: An ingredient in a mixture of composting raw materials included to improve the structure, porosity, and air flow of the mix. Bulking agents are usually rigid and dry and often have large particles (for example, straw or wood chips).

Carbon-To-Nitrogen Ratio (C:N): The relative amount of carbon to nitrogen, e.g., a 2:1 ratio means that there is twice as much carbon as nitrogen. Bacteria, like all living organisms, require quite a bit of carbon and comparatively less nitrogen.

Compost: A stabilized (see "stability") organic product produced by a controlled aerobic decomposition process that can be used as a soil additive, fertilizer, growth media or other beneficial use.

Composting: The accelerated biological decomposition of organic matter under managed aerobic

conditions resulting in compost.

Compostable: Capable of undergoing biological decomposition in a compost site such that the material is not visually distinguishable and breaks down into carbon dioxide, water, inorganic compounds, and biomass, at a rate consistent with known compostable materials.

Compostable Plastic: A plastic that undergoes degradation by biological processes during composting to yield CO2, water, inorganic compounds, and biomass at a rate consistent with other known compostable materials and leaves no visible, distinguishable or toxic residue.

Compostable Products: Containers, films or foodservice ware such as bowls, plates, cups, cutlery, composed of materials such as vegetable matter, paper, cardboard, and plastics that meet ASTM D6400, D6868. These products should be labeled in accordance with the USCC Labeling Guidelines.

Contact Water: Water that has come in contact with raw feedstocks or active composting piles. It does not include water from curing piles, finished compost or product storage piles.

Contamination: Any introduction of microorganisms, chemicals, wastes, or wastewater in a concentration that makes compost unfit for its intended use.

Curing: The final stage of composting that occurs after much of the readily metabolized material has been decomposed. Provides for additional stabilization and reduction of pathogens and allows further decomposition of cellulose and lignin.

Decomposition: The breakdown of organic matter through microbial action.

Digestion: The biochemical decomposition of organic matter, resulting in partial gasification, liquefaction, and mineralization of pollutants.

Extended Pile: A pile form used in the aerated static pile composting technique in which a large pile is constructed of individual cells, each with an aeration system. Cells are added daily and stacked against the previous cell, giving the overall pile a nearly rectangular cross-section.

Exchange Capacity: A measure of the nutrient holding power of a soil or soil amendment, such as compost. Indicates a soil's ability to attract and retain plant nutrients which exist as charged molecules or ions. Cation exchange capacity concerns positively charged ions. Anion exchange capacity refers to negatively charged ions. Cation exchange is usually stressed because most soils have a negative charge and, therefore, attract the positively charged cations typically supplied by fertilizers.

Feedstock: Biologically decomposable organic material used for the production of compost; the materials to be decomposed through the composting process.

Fertilizer Value: An estimate of the value of commercial fertilizer elements (N, P, K) that can be replaced by manure or organic waste material. Usually expressed as dollars per ton of manure or quantity of nutrients per ton of manure.

Food Residuals: Pre- and post-consumer food discards from households and the commercial/ institutional sector including but not limited to vegetables, fruits, grains, dairy products, meats, and compostable foodservice ware/packaging that may be commingled.

Greens: Denotes organic materials high in nitrogen, more specifically, materials whose carbon to nitrogen ratio is lower than 30:1. (Materials high in carbon are referred to as "browns"). Achieving a carbon-to-nitrogen ratio of about 30:1 is one factor in creating favorable conditions for backyard pile composting.

Green Manure: Plant material incorporated into the soil, while green, to improve the soil.

Heavy Metals: A group of metallic elements that include lead, cadmium, zinc, copper, mercury, and nickel. Can be found in considerable concentrations in sewage sludge and several other waste materials. High concentrations in the soil can lead to toxic effects in plants and animals ingesting the plants and soil particles.

Humus: The dark or black carbon-rich complex aggregate made during the decomposition of plant and animal residues; mainly derivatives of lignin, proteins, and cellulose combined with inorganic soil parts.

In-vessel Composting: Process in which decomposing organic material is enclosed in a drum, silo, bin, tunnel, or other container for the purpose of producing compost; and in which temperature, moisture and air-borne emissions are controlled, vectors are excluded and nuisance and odor generation minimized.

Leachate: Liquid "run-off." Leachate from the compost pile contains nutrients generated in the composting process. (In contrast, as groundwater and rain flow through a landfill, they pick up weak acids created by decaying organic matter. As these acids react with other garbage, the leachate can become toxic which may contaminate streams and groundwater unless the landfill is properly constructed to contain the run-off.)

Mature Compost: The stabilized and sanitized product of composting; has undergone decomposition and is in the process of stabilization; is characterized as containing readily available forms of plant nutrients; is low in phytotoxic acids.

Mesophilic: Operationally, the temperature range most conducive to the maintenance of optimum digestion by mesophilic bacteria, generally accepted as between 50 and 105°F (10 and 40°C).

Mulch: Any organic or inorganic material used on the soil surface to reduce weeds, conserve soil moisture, improve water infiltration, or for aesthetic purposes.

Mycelium: The collective term for fungus filaments or hyphae.

Organic Waste: Waste materials derived from living organisms, such as food, animal, garden and lawn clippings, and wood waste, which can be recycled and turned into valuable products such as

compost or renewable energy.

Passive Aeration: Air movement through composting windrows and piles which occurs by natural forces including convection, diffusion, wind, and the tendency of warm air to rise (thermal buoyancy).

Passive Composting: Method of composting in which there is little management and manipulation of the materials after they are mixed and piled. Turning occurs infrequently (for example, monthly). Forced aeration is not provided.

Passively Aerated Windrow Composting: A composting method in which windrows are constructed over a series of perforated plastic pipes, which serve as air ducts for passive aeration. Windrows are not turned.

Pathogen: Any organism capable of producing disease or infection. Often found in waste material, most pathogens are killed by the high temperatures of the composting process.

Permeability: A measure of the rate at which water can percolate through soil.

Phytotoxin: An element or compound that injures plants. Immature or anaerobic compost may contain acids or alcohols that can harm seedlings or sensitive plants.

Pre-Consumer Food Scraps: Waste created before reaching the consumer as a result of food processing, such as vegetable culls, brewery by-products, coffee grounds or kitchen preparation waste.

Post-Consumer Food Waste: Food that has been served to consumers but not eaten.

Recipe: The ingredients and proportions used in blending together several raw materials for composting.

Thermophilic: Heat-loving microorganisms that thrive in and generate temperatures above 105°F (40°C).

Turning: A composting operation which mixes and agitates material in a windrow pile or vessel. Its main aeration effect is to increase the porosity of the windrow to enhance passive aeration. It can be accomplished with bucket loaders or specially designed turning machines.

Turned Aerated Pile System: The Turned Aerated Pile (TAP) is the fastest way to make compost on a large scale. Unlike static piles, turned aerated pile systems are turned 2 to 3 times per week to break up organic material, re-establish porosity and re-wet the compost.

Vermicomposting: The process by which worms convert organic waste into worm castings – the dark, fertile, granular excrement of a worm. Castings are rich in plant nutrients.

Windrow Composting System: Process in which decomposing organic materials are placed in long piles for the purpose of producing compost. The piles are periodically turned or agitated to assure all parts of the decomposing material reach the desired stability.

WHAT ARE THE DIFFERENT TYPES OF WASTE CONTAINERS?

Bin: A small waste collection container used to hold limited quantities of discards, such as compostables, recycling, or landfill waste, before being transported to a larger disposal container, such as a dumpster.

Cart: See Tote or Roll Cart.

Commingled Container: A single waste container used to house a blended collection of some or all of the following material categories: paper, aluminum, steel, glass, and plastic.

Compactor: A type of equipment that uses pressure to compress recyclables or waste materials into a dense mass.

Container: Any receptacle used to hold waste from residential, commercial and industrial sites. Containers vary in size and type according to the needs of the user or restrictions of the community. Containers are also referred to as dumpsters.

Dumpster: A large waste collection container designed to be lifted and emptied into a garbage or recycling truck.

Front Load Dumpster: A mid-size waste collection container that is emptied via prongs on the front of a waste collection truck, lifting the container up and over the front of the truck to be dumped upside down in the open back of the truck.

Gaylord: A large reusable corrugated container. The standard size of a Gaylord box is 48" x 40" x 36". It is generally placed on a wooden pallet and used for storing and transporting materials such as hazardous or universal waste as well as recyclables.

Lockbar: A locking system used on dumpsters to keep the dumpster lid closed for the purpose of preventing rainwater entry and to keep unauthorized users from discarding waste into the container.

Roll-off or Open Top: A large, open top waste collection container designed for industrial businesses or temporary projects like landscaping work or construction. Unlike front load containers, trucks can only haul one roll-off at a time.

Tote or Roll Cart: A cart on wheels used to collect waste and recyclables. The wheels are used to facilitate transportation to the curbside or to the hauling truck; also known as a rear load container.

WHAT ARE THE DIFFERENT TYPES OF COLLECTION VEHICLES?

Front Loader: A solid waste collection vehicle that collects waste utilizing two forks to lift various size containers or dumpsters. Solid waste is loaded into the top of the truck and compacted within the box. This type of truck is typically used for collection of solid waste generated by commercial users. It is also used for cardboard-only collection.

Packer Truck, Compacter Truck: A refuse or recycling collection vehicle that compacts the materials. This is the most common type of refuse collection vehicle.

Rear Packer: A solid waste collection vehicle that collects waste by placing it in an opening at the rear of the truck. The waste can be placed manually or by automation. The solid waste is mechanically pushed into the box of the truck and compacted. This type of truck is typically used to collect solid waste generated by residential users.

Roll-Off: See definition under waste containers and equipment, above.

Side Loader: A solid waste collection vehicle that collects waste by placing it in an opening at the side of the truck. The waste can be placed manually or by automation. The solid waste is mechanically pushed into the box of the truck and compacted. This type of truck is typically used to collect solid waste or recycling from residential users.

WHAT TYPES OF EQUIPMENT ARE USED AT RECYCLING PROCESSING FACILITIES?

Many advancements have been made to increase the speed and efficiency at which recovered materials are processed before being shipped to end markets. Below is a list of common equipment employed by large MRFs and smaller recycling processors.

Air Separator: An air separation unit can be used to remove light debris and low value materials from a stream of potentially recyclable waste. In most cases, high pressure air is blown over the drop off point of a conveyor, allowing the heavier material to fall away to the next conveyor while the light material is blown into a bin or some other depository. Other air separators may use vacuum or cyclone technology to suck lightweight, non-metallic materials from the waste stream instead.

Artificial Intelligence: Increasingly being adopted by larger MRFS, artificial intelligence directs sorting decisions for recycling equipment using robotic and optical sorters.

Baler: Equipment used to compact and bind a cube or block of recyclable material, such as

cardboard.

Conveyor: One of the carrying or transporting mechanisms of a recycling or waste management installation.

Eddy Current Separator: An eddy current separator uses a powerful magnetic field to separate non-ferrous metals from waste after all ferrous metals have been removed previously by some arrangement of magnets. The eddy current separator is applied to a conveyor belt carrying a thin layer of mixed waste. At the end of the conveyor belt is an eddy current rotor. Non-ferrous metals are thrown forward from the belt into a product bin, while non-metals simply fall off the belt due to gravity.

Feeder: A vibratory feeder, also known as a vibratory conveyor, is a type of equipment that uses vibrations to transport bulk material through stages of a particular process, like packaging, recycling, or finishing. A drum feeder is a spinning drum that evenly distributes recyclables onto a conveyor belt.

Granulator: Granulators grind material down to a uniform size. This can improve magnetic separation capability for materials like electronic scrap, wire and cable, and plastics.

Grappler: Grapplers can pick up large quantities of scrap material from storage piles and place the material into processing equipment, like material separators, shredders, and balers.

Infrared Laser: Infrared laser beams shine on plastic items and a sensor detects the signatures of different grades of plastic. Strategic puffs of air separate the recyclable and nonrecyclable kinds into different bins.

Manual Sorting: Sorting by workers that hand-pick recyclable materials from a moving conveyor and sort them into different containers.

Magnetic Sorter: A powerful magnet that passes above a conveyor and attracts anything magnetic.

Optical Sorter: High-speed, high-resolution cameras, three-dimensional sensors and near-infrared optics identify and sort material using jets of air to change the trajectory of material toward the desired location. Optical sorters are best suited for fiber sorting and container sorting in medium- to high-volume plants.

Robotic Sorter: High-speed, high-resolution cameras, three-dimensional sensors and near-infrared optics identify and sort material. Robotic systems use complex algorithms and more sophisticated programming that allow for improved sorting performance over time. In effect, these machines learn how to be more efficient the more they are used. Used in lower-volume plants or as a second-tier sorter to target high-value materials missed earlier in the process.

Screener: Screeners separate materials and come in a huge variety of styles and sizes to meet the requirements of different applications and particular materials. There are vibratory screeners, rod

decks, trommel screens, disc screeners and star screeners. Generally, they are used to separate smaller materials from the general bulk of recyclables. The smaller pieces fall through the screen where they can be baled or processed further.

Shredder: There are different types of shredders for almost every kind of material. They are generally made of rotating discs with sharp teeth that pull objects in and break them up into smaller pieces.

Tipping Floor: Dump trucks deliver mixed recyclables to the recycling facility and pile them on the floor. The driver checks to make sure no oversize objects are in the mix.

WHAT ARE THE DIFFERENT TYPES OF MUNICIPAL WASTE COLLECTION MODELS?

Contract Collection: Collection by a private collector under a formal agreement with a municipal authority in which the rights and duties of the respective parties are set forth.

Hauler / Collector: A public or private entity that collects non-hazardous waste and recyclable materials from residential, commercial, institutional and industrial sources.

Household Collection: Each household sets out its own container of recyclables for collection at a designated location or residents in a multi-family complex place their recyclables in central storage containers serving the whole complex.

Open-Competitive Collection System: Waste collection services are provided by private haulers. Price for collection services are determined by waste hauler with little or no governmental oversight.

Organized Collection System: Residential waste collection services are managed by local government through contracts with local haulers in specific geographic area(s).

Pay-As-You-Throw (PAYT) / Unit-Based / Volume-Based Pricing: Systems under which residents pay for municipal waste management and disposal services by weight or volume collected, not a fixed fee.

Route: A specifically directed course that a driver follows that has been designed for efficiency and to provide optimal service to customers.

Swap Program: A waste collection program in which full bins are removed by the hauler or collector and replaced with empty ones.

WHAT ARE THE DIFFERENT TYPES OF MUNICIPAL RECYCLING COLLECTION MODELS?

Curbside Collection: A method of collecting recyclable materials at homes, community districts, or businesses.

Drop-off Sites: Community recycling sites free and open to the public for recycling both traditional and non-traditional recyclables.

Dual Stream (DSR): Recyclables are separated into two streams. One contains products made from paper fiber and the other is for cans and bottles.

Single Stream (SSR) / Mixed / Commingled Recycling: A mixture of several recyclables in one container, such as plastics, paper, metal and/or glass, as opposed to collecting and storing each material separately.

Source Separated or Multi-Stream: A system of segregating various waste streams at the point of generation to make recycling simpler, more efficient or cost-effective. Can be collected curbside or at drop-off locations.

WHAT IS A MUNICIPAL SOLID WASTE LANDFILL AND HOW DOES IT WORK?

Ever wonder when you throw something away, where away is? Every piece of waste that is landfilled has an impact which doesn't simply end once it is buried. Here are common terms related to landfills.

Bottom Liner: The bottom liner separates and prevents buried waste from coming in contact with underlying natural soils and groundwater. In Municipal Solid Waste landfills, the bottom liners are generally constructed using some type of durable, puncture-resistant synthetic plastic HDPE (High Density Polyethylene) ranging from 30 to 100 mils thick.

Capping: Covering (or capping) is performed in order to isolate waste from exposure to the air, pests (such as birds, rats and mice) and to control odors. When a section of the landfill is finished or filled to capacity, it is permanently covered with a combination of a layer of polyethylene plastic, compacted soil and a layer of topsoil that will support growth of vegetation to prevent erosion.

Cell: Landfills are constructed in phases (cells) that adjoin one another, separated by a berm to contain leachate within an area. The entire permitted area is divided into separate cells for construction.

Closure: The period of time after a landfill has reached its permitted capacity but before it has received certification of closure from a state regulatory agency. During the closure period, certain activities must be performed to comply with environmental and other regulations (e.g. capping, landscaping, etc.).

Closed Landfill: A landfill that has reached its permitted waste capacity and has been permanently capped and certified as closed by the appropriate state regulatory agency.

Compaction: Reduction of the bulk of solid waste by rolling and tamping.

Construction & Demolition Landfill: Construction and demolition (C&D) debris refers to materials produced in the process of construction, renovation and/or demolition of structures. Debris typically includes concrete, asphalt, wood, gypsum wallboard, paper, glass, rubble, and roofing materials. C&D debris landfills are classified as non-hazardous and are regulated by states and local governments.

Daily Cover: Waste that is placed in a cell is required to be covered daily with either six inches of compacted soil or an alternative daily cover.

Disposal Fee: A fee charged for the amount of waste disposed of by customers at a landfill. A disposal fee may be in addition to a "Tipping Fee" or "Gate Fee."

Fill: Man-made deposits of natural soils or rock products and waste materials.

Gatehouse: A gatehouse is found at a landfill or a transfer station. All incoming vehicles must stop to be processed and weighed, and all outgoing vehicles must stop to be weighed and receive a disposal ticket for charges. Also termed "Scale House."

Ground Water: The supply of fresh water found beneath the Earth's surface, usually in aquifers, which supply wells and springs. Because ground water is a major source of drinking water, there is growing concern over contamination from agricultural or industrial pollutants or leaking underground storage tanks or landfills.

Groundwater Monitoring Stations: These stations are set up to directly access and test the groundwater around the landfill for presence of leachate chemicals. Typically, a groundwater monitoring system will have a series of wells that are located up-gradient of the landfill disposal area and a series of wells down-gradient to compare relative water quality.

Incineration: A method for the destruction of waste by controlled burning at high temperatures.

Municipal Solid Waste (MSW) Landfill: A landfill is a carefully engineered and monitored structure built into or on top of the ground, in which trash is separated from the area around it to prevent contamination in the surrounding environment, especially groundwater.

Landfill Gas: Landfill gas (LFG) is a natural byproduct of the decomposition of organic material in landfills. LFG is composed of roughly 50 percent methane (the primary component of natural gas), 50 percent carbon dioxide (CO2) and a small amount of non-methane organic compounds. Instead

of escaping into the air, LFG can be captured, converted, and used as a renewable energy resource. Using LFG helps to reduce odors and other hazards associated with LFG emissions, and prevents methane from migrating into the atmosphere and contributing to local smog and global climate change.

Leachate: Liquids that have come in contact with waste. Leachate accumulates in the waste footprint of the landfill. Leachate levels within the landfill must be monitored and cannot exceed state regulatory agency established levels.

Leachate Collection System: The bottom of each landfill is typically designed so that the bottom surface of the landfill is sloped to a low point, called a sump. This is where any liquids that are trapped inside the landfill — called leachate — are collected and removed from the landfill. A leachate collection system typically consists of a series of perforated pipes, gravel packs and a layer of sand or gravel placed in the bottom of the landfill. Once the leachate is removed from the sump, it is typically pumped or gravity-flowed to a holding tank or pond, where it is either treated on site or hauled off site to a public or private wastewater treatment facility.

Methane Collection System: Methane is a potent greenhouse gas 28 to 36 times more effective than CO2 at trapping heat in the atmosphere over a 100-year period. Municipal solid waste (MSW) landfills are the third-largest source of human-related methane emissions in the United States, accounting for approximately 14.1 percent of these emissions in 2017. Since methane gas has the potential to burn or explode, it has to be removed from the landfill. To do this, a series of pipes are embedded within the landfill to collect the methane gas, which can be flared or beneficially used in an LFG energy project.

Post-Closure: The period of time after a landfill is certified as closed by a state regulatory agency, until WM has no further monitoring responsibility. Environmental and other regulations require the owner of the closed landfill to continue monitoring activities and general maintenance of the site for a specific period of time (generally 30 years).

Sanitary Landfill: A disposal site for non-hazardous solid waste, which is spread in layers, compacted to the smallest practical volume and covered by material applied at the end of each operating day.

Secure Chemical Landfill: Disposal sites for hazardous waste that are selected and designed to minimize the change of release of hazardous substances into the environment

Tipping Fee: A tipping fee or a gate fee is a fee paid by anyone who disposes of waste in a landfill. Usually this fee is based on the weight of waste per ton. This fee serves in helping with the maintenance and other operating costs of a landfill.

Transfer Station: A facility that consists of a large pad where residential and commercial collection vehicles empty the contents of their trucks. Other machinery (e.g. bulldozers) is then used to push the garbage into long-haul trailers for transport to disposal facilities.

Working Face: The section of the landfill where waste is being actively placed by disposal vehicles

WHERE CAN MATERIALS BE COLLECTED FOR REUSE OR PROCESSED TO CONSERVE RESOURCES?

Buy-Back Center: Facility where individuals or groups bring recyclables in return for payment.

Construction and Demolition Waste Processing Facility: A volume reduction plant that accepts mixed or source-separated C & D waste generated elsewhere. Reusable and recyclable material are sorted and processed, resulting in a reduction in construction and demolition waste disposed in the landfill.

Composting Facility: 1. An offsite facility where the organic component of municipal solid waste is decomposed under controlled conditions; 2. An aerobic process in which organic materials are ground or shredded and then decomposed to humus in windrow piles or in mechanical digesters, drums, or similar enclosures.

Drop-off Center: A central, predesignated area, building, or facility set up to receive recyclables which are dropped off by individuals.

End Destination Facility: Facilities such as mills, manufacturers and compost facilities that acquire recyclable materials for conversion into new products or raw materials.

Materials Recovery Facility (MRF): A facility where recyclable materials are separated from each other and processed for shipment and sale to various markets.

Plastic Recycling Facility (PRF): A facility that sorts mixed plastic items into streams of plastic resin types.

Rendering Facility: A facility that converts liquid fats and solid meat products into raw materials used in animal food, food cosmetics, soaps, etc.

Waste-to-Energy Facility (WtE): A facility where recovered municipal solid waste is converted into a usable form of energy, usually via combustion.

WHAT ENVIRONMENTAL REGULATIONS APPLY TO LANDFILLS AND WASTE PROCESSING FACILITIES?

[Note: Each of the following regulations includes legal definitions related to the regulations that may differ from definitions in other areas of this lexicon.]

Landfill Disposal Fee – Revised Nebraska Statute 13-2042: A disposal fee of $1.25 is imposed for each six cubic yards of uncompacted solid waste, $1.25 for each three cubic yards of compacted solid waste, or $1.25 per ton of solid waste. Each operator of a landfill or solid waste processing facility pays the fees quarterly as follows:

- Fifty percent of the total collected is remitted to the State Treasurer for credit to the Integrated Solid Waste Management Cash Fund to cover the direct and indirect costs of responding to spills or other environmental emergencies, of regulating, investigating, remediating, and monitoring facilities, or of performance of regulated activities under the Integrated Solid Waste Management Act, the Nebraska Litter Reduction and Recycling Act, and the Waste Reduction and Recycling Incentive Act.

- The remaining fifty percent of the total is remitted to the State Treasurer for credit to the Waste Reduction and Recycling Incentive Fund. From this fund, grants are awarded to counties, municipalities, and other agencies for planning and implementing facilities and systems to further the goals of the Integrated Solid Waste Management Act. It can also be dispersed to political subdivisions for costs incurred in response to and remediation of any solid waste disposed of improperly or abandoned.

NDEE Title 128 Nebraska Hazardous Waste Regulations: Requires anyone subject to the requirements for large quantity generators (generates more than 1,000 kilograms (2,200 pounds) of hazardous waste per month) at any time during a calendar year and/or facilities that treat, store or dispose of hazardous waste to prepare and submit to the Nebraska Department of Environmental Quality (NDEQ) by March 1 of each even numbered year a Hazardous Waste Report for the reporting cycle.

NDEE Title 132 Integrated Solid Waste Management Regulations: The purpose of this program is to ensure proper management of solid waste. Solid waste includes municipal solid waste typically collected and disposed in municipal landfills, and other non-hazardous waste. The regulations provide technical criteria for land disposal areas and solid waste processing facilities. Compost operations fall under this regulation.

RCRA (Resource Conservation and Recovery Act): RCRA is the Resource Conservation and Recovery Act, which was enacted by Congress in 1976. RCRA's primary goals are to protect human health and the environment from the potential hazards of waste disposal, to conserve energy and natural resources, to reduce the amount of waste generated, and to ensure that wastes are managed in an environmentally sound manner.

Subtitle D: The Federal rules and regulations that govern the environmental operations of MSW landfills.

ENVIRONMENTAL TERMS

Nebraska Recycling Council's motto is "waste nothing," so not surprisingly, we use plenty of terminology centered on recycling, composting and diverting waste from landfills. Here are just a few of the terms you might hear:

Best Management Practice (BMP): Methods that have been determined to be the most effective, practical means of preventing or reducing pollution from non-point sources.

Bottle Bill: Proposed or enacted legislation which requires a returnable deposit on beer or soda containers and provides for retail store or other redemption. Such legislation is designed to discourage use of throw-away containers.

Carbon Footprint: A measure of the impact our activities have on the environment, and in particular climate change. It relates to the amount of greenhouse gases produced in our day-to-day lives through burning fossil fuels for electricity, heating and transportation etc. The carbon footprint is a measurement of all greenhouse gases we individually produce and has units of tons (or kg) of carbon dioxide equivalent.

Climate Change: The shift in seasonal patterns we see as global warming throws nature out of balance. The term 'climate change' is used to imply a significant change from one climatic condition to another.

Climate Crisis: Serious problems that are being caused or likely to be caused by changes in the world's weather, in particular the world getting warmer as a result of human activity increasing the level of carbon dioxide in the atmosphere. There are some basic well-established scientific links:

- The concentration of GHGs in the earth's atmosphere is directly linked to the average global temperature on Earth;
- The concentration has been rising steadily, and mean global temperatures along with it, since the time of the Industrial Revolution;
- The most abundant GHG, accounting for about two-thirds of GHGs, carbon dioxide (CO2), is largely the product of burning fossil fuels.

Conservation: Preserving and renewing, when possible, human and natural resources. The use, protection, and improvement of natural resources according to principles that will ensure their highest economic or social benefits.

Cost/Benefit Analysis: A quantitative evaluation of the costs which would have incurred by implementing an environmental regulation versus the overall benefits to society of the proposed action.

Deconstruction: A technique practitioners are using to salvage valuable building materials, reduce

the amount of waste they send to landfills, and mitigate other environmental impacts. It is the disassembly of a building and the recovery of its materials, often thought of as construction in reverse.

Disposables: Consumer products, other items, and packaging used once or a few times and discarded.

Diversion Rate: The percentage of waste materials diverted from traditional disposal such as landfilling or incineration to be recycled, composted, or re-used.

Durable Goods: Sturdy items, like furniture or appliances that can be used for many years. When people repair these products instead of buying new ones, they save money and reduce waste.

End User: Consumer of products for the purpose of recycling. Excludes products for re-use or combustion for energy recovery.

Energy Recovery: Energy recovery from waste means the conversion of (non-recyclable) waste into usable heat, electricity, or fuel through a variety of processes, including combustion, gasification, pyrolization, anaerobic digestion, and landfill gas recovery. Also known as Waste to Energy (WtE). This practice is in conflict with the Zero Waste International Alliance definition of Zero Waste.

Environmental Equity/Justice: Equal protection from environmental hazards for individuals, groups, or communities regardless of race, ethnicity, or economic status. This applies to the development, implementation, and enforcement of environmental laws, regulations, and policies, and implies that no population of people should be forced to shoulder a disproportionate share of negative environmental impacts of pollution or environmental hazard due to a lack of political or economic strength levels.

Extended Producer Responsibility (EPR): Environmental protection strategy to reach an environmental objective of a decreased total environmental impact from a product, by making the manufacturer of the product responsible for the entire life-cycle of the product and especially for the take-back, recycling and final disposal of the product.

Global Warming: Refers to an increase in average annual temperatures we've seen since the Industrial Revolution. Global warming has occurred in the distant past as the result of natural influences, but the term is most often used to refer to the warming resulting from increased emissions of greenhouse gases.

Greenhouse Effect: The warming of the Earth's atmosphere attributed to a buildup of carbon dioxide or other gases; some scientists think that this build-up allows the sun's rays to heat the Earth, while making the infra-red radiation atmosphere opaque to infra-red radiation, thereby preventing a counterbalancing loss of heat. (EPA Glossary)

Greenhouse Gas: Any chemical or physical substance that is emitted into the air and that the Commissioner of Environmental Protection may reasonably anticipate to cause or contribute

to climate change, including, but not limited to, carbon dioxide, methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons and sulfur hexafluoride.

Incineration: A treatment technology involving destruction of waste by controlled burning at high temperatures; e.g., burning sludge to remove the water and reduce the remaining residues to a safe, non-burnable ash that can be disposed of safely on land, in some waters, or in underground locations.

Incinerator: A furnace for burning waste under controlled conditions.

Participation Rate: Portion of population participating in a recycling program.

Percent Recyclables Remaining: The calculation of the amount of recyclables in the waste stream and deposited in a landfill.

Product Stewardship: Product stewardship is a principle that directs all participants involved in the life cycle of a product to take shared responsibility for the impacts to human health and the natural environment that result from the production, use and end-of-life management of the product. The greater the ability of a party to influence the life cycle impacts of a product, the greater the degree of that party's responsibility. The stakeholders typically include manufacturers, retailers, consumers, and government officials.

Recovery Rate: Percentage of usable recycled materials that have been removed from the total amount of municipal solid waste generated in a specific area or by a specific business.

Resource Management: The process and policy of managing materials and energy throughout their lifecycle with the aim to maximize the efficiency of material and energy utilization and minimize loss of material as waste for disposal.

Resource Recovery: Discarded materials are collected, diverted from the landfill, and then repurposed for additional useful applications through a variety of processes.

Reuse: The reapplication of a package or used product or material in a manner that retains its original form or identity. Unlike recycling, reuse does not involve processes that significantly alter the original condition of the package or product.

Single-use Plastics: Items used only once before they are thrown away or recycled. These items are things like plastic bags, straws, coffee stirrers, soda and water bottles and most food packaging.

Sustainable Materials Management: A systemic approach to using and reusing materials more productively over their entire life cycles. It represents a change in how a society thinks about the use of natural resources and environmental protection.

Sustainability: Meeting the needs of the present without compromising the ability of future generations to meet their own needs.

Salvage: The utilization of waste materials.

Source Reduction: Reducing the number of materials entering the waste stream from a specific source by redesigning products or patterns of production or consumption. Source reduction is sometimes referred to as waste prevention.

Toxicity Reduction: The re-design, manufacture, purchase or use of material, product or packaging so as to minimize their toxicity throughout their useful life and when they are reused, recycled, landfilled, or incinerated.

Waste Diversion: The act of preventing waste from being disposed into landfills and incinerators.

Waste Exchange: Arrangement in which companies exchange their wastes for the benefit of both parties.

Waste Generation: The weight or volume of materials and products that enter the waste stream before recycling, composting, landfilling, or combustion takes place. Also can represent the amount of waste generated by a given source or category of sources.

Waste Reduction or **Minimization:** Recycling and other efforts to reduce the amount of waste going into the waste stream by redesigning products or patterns of production or consumption.

Zero Waste: The conservation of all resources by means of responsible production, consumption, reuse, and recovery of products, packaging, and materials without burning and with no discharges to land, water, or air that threaten the environment or human health.

ABBREVIATIONS & ACRONYMS

ASTM - American Society for Testing and Materials

ADC - Alternative Daily Cover

BMP - Best Management Practice

CED - Covered Electronic Device

BPI - the Biodegradable Products Institute

CAA - Clean Air Act

CERCLA - Comprehensive Environmental Response, Compensation and Liability Act

CFL - Compact Fluorescent Lamp

DMMP - Dredged Material Management Plan

ECOS - Environmental Commissioners Organization of the States

EPA - Environmental Protection Agency

EPP - Environmentally preferable purchasing

FOG - Fats, oils and grease

FR - Federal Register

HAP - Hazardous air pollutants

HDPE - High Density Polyethylene

HHW - Household Hazardous Waste

IPC - Intermediate Processing Center

KNB - Keep Nebraska Beautiful

LEED - Leadership in Environmental Energy Design – A U.S. Green Building Council program that promotes "green building" initiatives and programs.

LNM - League of Nebraska Municipalities

MACT - Maximum Achievable Control Technology (Air quality standards for RRFs)

MSW - Municipal Solid Waste

NAAQS - National Ambient Air Quality Standards

NDEE - Nebraska Department of Energy & Environment

NET - Nebraska Environmental Trust

NRC - National Recycling Coalition or Nebraska Recycling Council

NEPSI - National Electronics Product Stewardship Initiative

NERC - Northeast Recycling Coalition

NESHAP - National Emission Standards for Hazardous Air Pollutants

NGO - Non-governmental organization

NOV - Notice of Violation

NRD - Natural Resource District

NPDES - National Pollution Discharge Elimination System

NSPS - New Source Performance Standards

OCC - Old Corrugated Cardboard

ONP - Old Newspaper

RMP - An acronym for residential mixed paper from curbside or drop-off center collection.

SWANA - Solid Waste Association of North America

SOURCES

BPI Biodegradable Products Institute

Earth 911

EPA Glossary

EPA, Lifecycle Construction Resource Guide, February 2008

EPA Mission to Earth/Kids Glossary

EPA RCRA Online

"On Farm Composting Handbook" (1992) Northeast Regional Agricultural Engineering Service, 186pp.

Product Stewardship Institute

Rubicon Global **"The Ultimate Glossary of Waste and Recycling Terms"**

USCC Model Compost Rules Version 1.1, published April 4, 2013

Zero Waste International Alliance