CLAIMS

1. A method of handling particulate plastic solids separated from a mixed plastic waste, the method comprising:

loading onto an elongate overhead conveyor associated with an enclosed structure said particulate plastic solids received from a mixed plastic waste separation system,

wherein the mixed plastic waste separation system employs a density separation medium in a density separation process; and

wherein the density separation medium comprises caustic solution;

transporting with said overhead conveyor said particulate plastic solids along the length of said enclosed structure; and

selectively depositing said particulate plastic solids into at least one of (a) a plastic solids transport system and (b) at least one particulate plastic solids inventory pile at one or more locations along the length of said conveyor and within said enclosed structure,

wherein said particulate plastic solids comprise one of a PET-enriched stream and a PET-depleted stream generated by the mixed plastic waste separation system; and

wherein the PET-enriched stream, the PET-depleted stream, and the at least one particulate plastic solids inventory pile have not been treated with an antimicrobial agent other than the density separation medium employed in the density separation process.

2. The method according to claim 1, wherein the caustic solution comprises sodium hydroxide, potassium hydroxide, or potassium carbonate.

3. The method according to claim 1, wherein said particulate plastic solids comprise a PET-enriched stream comprising greater than 70% by weight polyethylene terephthalate and

(a) from 0.1% to 4% by weight halogens, and having a microorganism content of less than 109 CFU/g of said plastic solids; or

(b) from 0.1% to 4% by weight polyvinyl chloride, and at least 0.1% by weight of solid materials that do not phase change below 270°C and 1 atm; or

(c) from 0.1% to 4% by weight halogens; or

(d) from 0.1% to 10% by weight polyvinyl chloride, and a moisture content of less than 4% by weight; or

(e) a nylon content of not more than 1% by weight; or

(f) a multilayered plastics content of not more than 10% by weight.

4. The method according to claim 1, wherein particulate plastic solids from said elongate overhead conveyor and/or from said at least one particulate plastic solids inventory pile are deposited in said particulate plastic solids transport system and transported from said enclosed structure to a plastic chemical recycling facility comprising at least one of a solvolysis facility, a POX gasifier facility, an energy generation/production facility, and a pyrolysis facility.

5. The method according to claim 4, wherein the plastic chemical recycling facility is located within 1609.34 m (one mile) of said enclosed structure.

6. The method according to claim 4, wherein said particulate plastic solids are deposited into said at least one particulate plastic solids inventory pile while said plastic chemical facility is in operation.

7. The method according to claim 4, wherein said particulate plastic solids are simultaneously deposited into said particulate plastic solids transport system from said overhead conveyor and from said at least one particulate plastic solids inventory pile.

8. A method of handling a polyethylene terephthalate (PET)-enriched solids stream and a PET-depleted solids stream, comprising:

receiving the PET-enriched solids stream and the PET-depleted solids stream from a mixed plastic waste separation system,

wherein the mixed plastic waste separation system employs a density separation medium in a density separation process; and

wherein the density separation medium comprises a caustic solution;

loading said PET-enriched solids stream onto a first elongate conveyor associated with a first enclosed structure, said first conveyor being located overhead within said first enclosed structure;

transporting with said first conveyor said PET-enriched solids stream within said first enclosed structure;

selectively depositing said PET-enriched solids stream into at least one of (a) a PET-enriched solids transport system and (b) at least one PET-enriched solids inventory pile at one or more locations along the length of said conveyor and within said first enclosed structure;

loading the PET-depleted solids stream onto a second elongate conveyor located within a second enclosed structure, said second conveyor being located overhead within said second enclosed structure and extending substantially the length thereof;

transporting with said second conveyor said PET-depleted solids stream within said second enclosed structure; and

selectively depositing said PET-depleted stream into at least one of (a) a PET-depleted solids transport system and (b) at least one PET-depleted solids inventory pile at one or more locations along the length of said conveyor and within said second enclosed structure,

wherein the PET-enriched stream, the PET-depleted stream, the at least one PET-enriched solids inventory pile, and the at least one PET-depleted solids inventory pile have not been treated with an antimicrobial agent other than the density separation medium employed in the density separation process.

9. The method according to claim 8, wherein said depositing of said PET-enriched stream occurs simultaneously with said depositing of said PET-depleted stream.

10. The method according to claim 8, wherein at least one of said PET-enriched solids and PET-depleted solids transport systems comprises a hopper and a pneumatic plastic-conveying conduit.

11. The method according to claim 8, wherein PET-enriched solids from said PET-enriched solids stream and/or said PET-enriched solids inventory pile are

deposited into said PET-enriched first particulate plastic solids transport system and transported from said first enclosed structure to a solvolysis facility located within 1609.34 m (one mile) of said first enclosed structure.

12. The method according to claim 8, wherein PET-depleted solids from said PET-depleted solids stream and/or said PET-depleted solids inventory pile are deposited into said PET-depleted solids transport system and transported from said second enclosed structure to at least one of a POX gasifier facility, an energy generation/production facility, and a pyrolysis facility.

13. The method according to claim 8, wherein the mode of depositing is different for said PET-enriched stream than for said PET-depleted stream.

14. The method according to claim 8, wherein the caustic solution comprises sodium hydroxide, potassium hydroxide, or potassium carbonate.

15. The method according to claim 8, wherein neither the PET-enriched nor PET-depleted streams, nor their respective inventory piles, have been treated with an antimicrobial agent other than a density separation medium employed in a density separation process.

16. A method of distributing streams comprising particulate plastic solids to one or more plastic chemical recycling facilities comprising:

conducting a polyethylene terephthalate (PET)-enriched solids stream from a particulate plastic solids handling facility to a solvolysis facility; and

conducting a PET-depleted solids stream from said particulate plastic solids handling facility to at least one of a partial oxidation gasification facility and a pyrolysis facility,

wherein said solvolysis facility and/or said at least one of a partial oxidation gasification facility and a pyrolysis facility are each located within 1609.34 m (one mile) of said particulate plastic solids handling facility.

17. The method according to claim 16, wherein the particulate plastic solids handling facility comprises first and second enclosed structures and first and second

elongate overhead conveyors associated with said first and second enclosed structures, respectively,

wherein said PET-enriched solids stream is carried by said first elongate overhead conveyor and selectively deposited into (a) a PET-enriched solids stream transport system and/or (b) at least one PET-enriched particulate plastic solids inventory pile at one or more locations along the length of said first elongate overhead conveyor, and

wherein said PET-depleted stream is carried by said second elongate overhead conveyor and selectively deposited into (a) a PET-depleted solids stream transport system and/or (b) at least one PET-depleted particulate plastic solids inventory pile at one or more locations along the length of said second elongate overhead conveyor.

18. The method according to claim 17, wherein said first and second elongate overhead conveyors individually comprise a belt conveyor, a pneumatic conveyor, a vibrating conveyor, or a screw conveyor.

19. The method according to claim 16, wherein said PET-enriched solids stream is depleted in multilayered plastics relative to said PET-depleted solids stream.

20. The method according to claim 16, wherein said PET-enriched solids stream is conducted from said particulate plastic solids handling facility to said solvolysis facility using a PET-enriched solids transport system, and wherein said PET-depleted solids stream is conducted from said particulate plastic solids handling facility to said at least one of a partial oxidation gasification facility, an energy generation/production facility, and a pyrolysis facility using a PET-depleted solids transport system.