Collection of Black Snakes from highways

- There exists political/social hue and cry about danger of exploded remnants of class-8 truck and trailer tires, brought to a head by several recent fatal accidents
- Trucking industry desires to get ahead of the PR problem by taking lead on investigating solutions, favoring proposals least onerous to industry
- You are tasked to develop black snake gathering device (post-explosion)

Assignment:

1. Determine feasible, independent Working Principles for each Functional Requirement (three WP’s for each FR is magic number, but if imagination for one FR is limited to one or two WP’s, then more WP’s may be added to other FR’s to make up). Arrange these as a Morphological Matrix, using very few words and/or a very simple sketch (hand-drawn is OK) to suggest how the WP might be applied to satisfy the FR. Common MM errors:
   a. WP’s are basic working (physical or design) principles, not parts or devices
   b. WP’s must really satisfy the subfunction (i.e. can be understood to satisfy it)
   c. WP’s must be independent (i.e., significantly different from each other)
   d. Be careful not to go too far with this – this is just selection of working principles – nothing you do should look like an embodiment (i.e. form of the whole device).

2. Concept Synthesis. From the morphological matrix of FR’s and working principles, synthesize **three** (not one, not two, and certainly not five) unique overall concepts. For each concept, submit:
   a. Sketch. Simple, surely, but not ‘rough’ (i.e., it still has to be uniquely communicative, neat, professional, understandable, and legible, and come with enough notes and call-outs that a fresh observer can readily interpret it). Best to make a rough sketch, and then revise it in a clean copy. Both hand and CAD are OK, but hand must use mechanical aids – no free-handing is allowed.
   b. Explanation of how the concept works and how the user needs are satisfied.
   c. Careful to keep the level of detail fairly low. This is just a concept – barely even a rough arrangement – and nothing like an embodied device.
   d. The whole idea of three different overall concepts is to explore how different (and promising!) combinations of WP’s can be combined to satisfy the user needs. The idea is not to make a slam dunk case for the image you already have in your mind. You should be just about as happy with any one of them.