MIXER TRUCK CHUTE WASHOUT

ENVIRONMENTAL BEST PRACTICE
WASHING DOWN READY MIX TRUCKS
CONCRETE MIXER WASHOUT

- In the past not a problem—just dump and go
- Started to become more of a problem in the past few years
- Will become even more so in the future—some States have regulations which say no mixer wash out water/materials will touch the ground
IOWA DNR’S POSITION

False. Just dump washout water on the ground and go?

Actually TRUE. No Iowa DNR rule controlling this activity.

IDNR position: Inert materials which cause no damage.
However, if wash out water causes a problem or violation of “other” rules then it cannot be done.

Example: if it becomes a storm water runoff violation or problem.
Ia. Dept. of Transportation's position

- “proper handling” of concrete washout is an industry wide issue
- Associated with all types of construction projects: including private work, local projects and IDOT Highway projects
- Have not included specific methods or outlined any processes in specifications

- Rely on the “general compliance requirements outlined in 1107.07”
IDOT encourages development of best practices, industry to follow good operating procedures, the industry to police itself.
IDOT obtains a NPDES Permit #2 for its projects which disturb more than one acre.

Contractors and Subcontractors are all subject to the conditions of the permit...which generally include managing wash down water/materials.
• Penalties/fine assessed to IDOT may be passed on to the contractor

• In addition IDOT could issue a non-compliance for improper procedures
Most metro areas in Iowa suggest construction projects:

- Must have “concrete waste management practices” for any concrete activity
- These practices include concrete wash out facilities to prevent runoff of concrete wash water
- Done either through Planning and Zoning, Building Code Enforcement or MSW4 Permits
Regarding *non-storm water discharges* it says contractor must:

- Identify and ensure implementation of appropriate pollution prevention measures including, but not limited to, concrete wash out and off-site tracking.
Construction entrances and exists must be designated

Erosion and sediment controls must be put in place prior to any excavation

“rock” placed at entrances and exits to minimize tracking and dust generation
- Wash out facility must be served by a “stabilized construction entrance” located on private property
- Concrete waste must be contained in wash out areas
- Area must contain concrete and liquids when equipment is rinsed out after delivery
- Saw cut slurry must be vacuumed or shoveled and removed from site or to concrete wash out area
- Wash out facility will allow material to consolidate for easy disposal
- Wash out areas must be removed or cleaned and all waste removed from site
US EPA’s recent activities

- USEPA’s reoccurring Storm Water Initiative

- Increased inspection at what they consider are major sources of water pollution caused by storm water runoff
  - Big Box Stores
  - RM Plants
  - RM Plants in Pits or Quarries
  - Pits/Quarries
US EPA inspections focus on both “paperwork” problems and site issues

Have permits been obtained when needed?

If you have a permit, has a SWPPP been developed?
● Has SWPPP been implemented?

● Is it being followed or collecting dust on a shelf?

● Has employee training been done?

● Are inspections outlined in plan being done?
- Have control structures been put in place?
- Have required samples been taken?
- Has everything been documented and signed as required?
- Is responsible person still employed or alive?
DRIVER EDUCATION AND RESEARCH GOALS

- Determine extent to which states/agencies regulate mixer truck chute washout process
- Examine how Ready Mix Companies currently handle the chute washout process
- Poll drivers using “on-board” containment systems
SURVEY RESULTS

- Trending toward more regulations at both State and local (city) levels

- Majority of drivers washout in some sort of containment structure

- Generally, training for drivers on where to washout but not on environmental impacts
CURRENT CHUTE WASHOUT PRACTICES

- On Ground Contained: 55%
- On Ground Uncontained: 28%
- On-Board Containment: 17%
ENVIROMENTAL EDUCATION SESSION

- Develop an understanding of Company’s Environmental Policy and how it relates to long term goals and initiatives
- Learn what impact ready mix chute washout water and other materials may have on our soil and water
- Help ready mix drivers understand “why” we ask them to do things in a certain manner when it comes to environmental issues
FACTS ABOUT OUR INDUSTRY

- Concrete: World’s Most Used construction material
  340 Million cubic yards per year in USA
- Byproducts: Washout/Waste & Wash water
- 340M cubic yards =
  - 34M mixer loads (@ 10 cy/mixer)
  - 4.32M tons of material left on chutes (@1/16 yd/chute)
  - 240M gallons of wash water (@ 7 gal water per chute)

4.32 M tons of leftover material = 34 times more than used to build the Sears Tower, amount to build an 8 lane highway 175 miles long or nearly the amount to construct the Hoover Dam

240 M gallons of water =
  Enough to provide for a pop. of 50,000 for 5 months
**CURRENT IMPACTS**

- 40% of all U.S. waterways are IMPAIRED (Unable to fish, swim or otherwise use)
- 70% of these polluted waters are DUE to non-point source pollution (e.g. concrete wash out water)
- How do we combat the problem?
WHY WE NEED TO COMPLY:

- Construction site sediment contribution: 10-20 times greater than agricultural land contribution, 1000-2000x’s greater than forestland sediment runoff.
- Sediment from a short term construction site runoff (in just months) greater than (decades of) natural events.
- NPDES storm water regulations (updated in 2003) require construction sites (> 1 acre) to follow the storm water permit rules.
- NPDES permits require storm water pollution prevention plans (SWPPP's).
- SWPPP's contain Best Management Practices (BMP) to minimize discharge of pollutants from the site.
WASH WATER INGREDIENTS

- Slurry of fine cement and stone dust particles
- Cement consists of: clinker, various sulfates & oxides, Chromium & Nickel compounds, & heavy metals
- Contaminants include: Barium, Chromium, Copper, Iron, Magnesium, Manganese, Nickel, Potassium, Selenium, Sodium, Vanadium, and Zinc, trace elements of petroleum, admixtures, etc.
- Suspended and dissolved solids – causes turbid water
WASH WATER INGREDIENTS

- pH measures how alkaline or acidic
- Safe range for plant & aquatic life = 6.5 - 9.0
- Wash water pH = 12+ = Caustic!
  - High Alkalinity
  - Equal to Liquid Draino, Ammonia

- Effect of High pH on aquatic life:
  - death, damage to gills, eyes, skin, unable to dispose of waste

- Effect of High pH on vegetation, soils:
  - Slow or limit growth, substantial alteration of soil chemistry
TURBIDITY AND TSS

- **Turbidity** - measure of water clarity
  Measured in NTU
  - 0 NTU = clear water
  - 60 NTU = certain fish only able to capture 5% of prey
  - 27,000 NTU = average concrete wash water at its source

- **TSS** – total suspended solids in water
  Measured in ppm (parts per million)
  - 75 ppm = highest solid count in average stream or river
  - 79,000 ppm = average in concrete wash water at its source
POTENTIAL VIOLATIONS
Complaint No. R8-2003-0100 for Administrative Civil Liability (Homebuilder)

**Imposed Fine - $50,000**

"...the concrete washout pit was not maintained and did not effectively contain concrete slurry...the washout was full of solid waste and surrounded by concrete slurry”

"...slurry from the concrete washout pit flowed into the street...washout flowed into the street and into the storm drain inlet.”

**FACT:** Under the City's Municipal Code §43.03, *Storm Water Management and Discharge Control*, it is illegal to wash out concrete, slurry, mortar, plaster and the like, into the storm water conveyance system or any receiving water. The penalties imposed for these for gross negligence and/or repeat offenses, the fines can increase to $10,000 per day per violation. *Pleading ignorance does not protect you from being fined for illegal discharges*
VARIOUS TYPES OF CHUTE WASH OUTS
VARIOUS TYPES OF WASH OUT CONTAINERS
In the future these activities will come under closer scrutiny by a greater number of regulatory agencies and the general public.

IDNR and USEPA are doing more in the area of water quality issues, storm water enforcement and runoff from construction sites.
CONCLUSIONS

- Mixer chute wash water contains pollutants
- Contributes to contamination of soil & water
- Most companies are committed to preventing pollution of any sort
- We must be part of this process and all “do the right thing”