When should I not kill -9 a process?

Generally, you should use kill -15 (kill –TERM) before kill -9 (kill –KILL) to give the target process a chance to clean up after itself. (Processes can't catch or ignore SIGKILL, but they can and often do catch SIGTERM.) If you don't give the process a chance to finish what it's doing and clean up, it may leave corrupted files (or other state) around that it won't be able to understand once restarted.

strace/truss, ltrace and gdb are generally good ideas for looking at why a stuck process is stuck. (truss -u on Solaris is particularly helpful; I find ltrace too often presents arguments to library calls in an unusable format.) Solaris also has useful /proc-based tools, some of which have been ported to Linux. (pstack is often helpful).

No no no. Don't use kill -9.

It doesn't give the process a chance to cleanly:

1) shut down socket connections

2) clean up temp files

3) inform its children that it is going away

4) reset its terminal characteristics

and so on and so on and so on.

Generally, send 15, and wait a second or two, and if that doesn't work, send 2, and if that doesn't work, send 1. If that doesn't, REMOVE THE BINARY because the program is badly behaved!

Don't use kill -9. Don't bring out the combine harvester just to tidy up the flower pot.