

Blessing in Disguise



One of the most interesting TRIZ problem solving principles is called "Blessing in Disguise". More simply, we could call this "make bad do good". Those of you who have been to our workshops have seen numerous real examples varying from packaging problems to manufacturing processes to diabetes medicine that illustrate the power of this principle. Here's another recent example from the <http://www.PhysOrg.com> web site (an excellent resource, by the way):

MicroRNAs make for safer cancer treatments - October 26th, 2008 in Medicine & Health / Research

Viruses -- long regarded solely as disease agents -- now are being used in therapies for cancer. Concerns over the safety of these so-called oncolytic viruses stem from their potential to damage healthy tissues. Now Mayo Clinic researchers have discovered a way of controlling the viruses behind potential cancer therapeutics. They are engineering the virus's genetic sequence, using microRNAs to restrict them to specific tissues. The microRNAs destabilize the virus's genome, making it impossible for the virus to run amok. The discovery is reported in the current issue of Nature Medicine. "Our findings demonstrate a new tool for molecular medicine that should also help allay concern over the use of viruses as a therapeutic delivery system," says Stephen Russell, M.D., Ph.D., Mayo physician-scientist and lead author of the study.

MicroRNAs are the nucleotide snippets that are encoded by genes, but don't end up as proteins. In many cases, they have a role in down-regulating different cellular genes. In this case, a virus is engineered to be responsive to microRNAs that are present in certain cell types. Using this new form of targeting, researchers redirected a virus normally responsible for a lethal muscle infection to recognize only cancer cells. The laboratory mice that received the engineered virus were cured of established tumors and suffered no ill effects.

What's the significance of this? Most viruses can infect different cell types, which leads to the array of symptoms during a viral infection. Now as viruses are being engineered for use as vaccines, cancer therapeutics and gene therapy vectors, researchers want to restrict and redirect the types of cells they do (or don't) infect as additional safeguards against disease. The target sequences of microRNAs used in the study kept the virus from destroying muscle cells while allowing viral replication to proceed in cancer cells allowing the virus to completely cure mice with melanoma.

The Mayo Clinic researchers say microRNA target insertion may be a new way to make viruses safer for use in cancer therapy and could lead to new methods of making safer vaccines.

How can you use this concept in your own problem solving? You probably have a long list of "problems" characterized by some parameter or aspect of the system or product that you'd like to get rid of. Now stop taking valium and Excedrin and make a list of these and then FORCE yourself to use these characteristics in a positive way. If something is too light, ask yourself how the absence of weight could be used in a positive way. What are the all the positive things about something being light? If something is not straight, ask yourself what are the benefits of something that is curved, twisted, or non linear? How could you use these differences in a positive way? You will be surprised at the ideas you come up with and may decide that you don't have a problem, but a positive resource that you never saw before.