

U.S. Army Research Laboratory Begins to See the Light with Digital Photography

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Many of the tests conducted at the U.S. Army Research Laboratory (ARL) employ traditional methods of taking and developing high-speed photographs and x-rays, but some facility managers have begun to see the light through a different lens. During the last few years, some of ARL's testing facilities have begun switching from the traditional photography and x-ray to digital technologies. Due to technological advancements and their associated cost savings, more of these opportunities were recently identified. It is estimated that ARL will eliminate over 900,000 pounds of waste each year if all of the new identified opportunities are realized. Although it will require a front-end investment, the payback ranges from 6 months to 4 years, ultimately saving ARL up to \$1.4 million annually.

Digital technology is becoming increasingly popular because of its fast, high quality results, its cost savings, and environmental benefits. Digital technologies eliminate the film and hazardous developing and fixing chemicals required for traditional darkroom development. The light-sensitive chemicals required to produce visible and permanent images, such as silver halides and acetic acids, are not only hazardous to the environment, but also to the people that use them. Contact with these chemicals can cause burning of the skin, light-headedness and nausea.

Another disadvantage of darkroom development chemicals is their brief shelf life and limited usage. Frequently, these substances are disposed of as hazardous waste even before they're used. Once used, the compounds change immediately, becoming ineffective for a second use, and must be discarded. Producing one roll of film requires four ounces of hazardous chemicals that are spent after only ten minutes of use. While here at APG, all fixer is collected and treated by a silver-collection and recovery device prior to disposal through the sanitary sewer, though this is time and resource intensive. Eliminating these chemicals is the best opportunity for cost and environmental savings.

Digital technology requires no film or chemicals for development. Thus, there is no waste of plastics, silver-infused film, or hazardous chemicals, and it has virtually no environmental impact. Digital images are available immediately, increasing productivity and improving test results. Since images are stored on a disk and then printed from a computer when necessary, the photographer has the benefit of choosing how many photographs to print virtually seconds after the photograph is taken. Furthermore, computer programs make it possible to modify and enhance photographs in ways not possible with traditional technology. Digital technologies allow researchers to correlate digital images with mathematical data, creating more precise measurements and results.

Computers, cell phones, and palm pilots have become a way of life over the last few years. Digital photography is also becoming increasingly popular for valid reasons. While saving time, money, and the environment are compelling motives to switch to this method, we can now add enhanced quality to this list of ever-expanding reasons to keep up with technological improvements.