

- The condition of the internal disconnect device is impossible to determine from external examination.
- For training and safety purposes, it is common to load a single round and fire the gun with the magazine removed.

Mechanical devices are not the answer when it comes to reducing accidental firearm fatalities and accidents. Adherence to the well-established rules of safe firearms storage and handling have served to reduce firearms-related fatalities to historically low levels - and adherence to these rules will be the key to future reductions.

The Sporting Arms and Ammunition Manufacturers' Institute is a trade association of the nation's leading manufacturers of sporting firearms and ammunition. Founded in 1926 at the request of the federal government, SAAMI has been actively involved in the publication of industry standards, coordination of technical data, and the promotion of safe and responsible firearms use. SAAMI currently publishes more than 700 standards related to firearm and ammunition quality and safety. For a listing of SAAMI members, please write to:

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SPORTING ARMS AND AMMUNITION MANUFACTURERS' INSTITUTE, INC.

Since 1926

Owner Recognition Technology

Loaded Chamber Indicators

Magazine Disconnect Features

Background Paper #9

OWNER RECOGNITION TECHNOLOGY

Owner recognition features are frequently touted as a possible future technology for use on firearms (commonly referred to as "smart guns"). Owner recognition features consist of mechanical or electronic devices that, either by voice recognition, radio frequency or magnetic wave transmission, or fingerprint identification (or other type of similar technology), allow only an authorized person to fire a firearm. This technology, if ever proven reliable and available, might be capable of "freezing" a firearm if the gun fell into the hands of an unauthorized user. Moreover, owner recognition features may not be desirable for use in all applications and circumstances.

As enticing as the prospect of a "smart gun" may be, the truth is that such technology is in the prototype stages and no feasible or reliable "smart gun" exists. Consider that all the current technologies require some type of power source. A key question is what happens when the power supply runs out. Does the gun become "un-smart" and operate like a normal firearm without the technology, or does the gun lock up and refuse to fire? The overriding concern with owner recognition features is that the technology not compromise the firearm's reliability. Any technology that relies on a solenoid power supply or wave transmission has the potential for not working or being jammed or interrupted at the precise moment the gun is needed to defend life, loved ones, or property. This potential downside must be eliminated to make owner recognition technology a feasible, reliable and accepted addition to firearms, especially handguns.

The firearms industry is not opposed to efforts to develop new technologies, including owner recognition technology, but it cannot now determine if they will ever prove practical or viable. Several major firearm manufacturers are attempting to develop various types of "smart gun" technology. Unlike incorporating owner recognition technology in other products, any technology incorporated in a firearm must work perfectly and instantaneously

every time. The few seconds it could take a recognition device to work or work properly could mean the difference between being a victim or warding off an attacker.

The firearms industry has spent millions of dollars advocating safe and responsible gun ownership. Secure gun locking devices, which do not have the above disadvantages, are being used today by every firearms manufacturer. The common-sense rules of safe firearm storage have helped reduce accidental firearm fatalities to historically low levels. Any safety device must not give gun owners a false sense of security about how and where they store their firearms. Any firearm, when not in use, should be locked up with the ammunition stored separately. The firearms industry is very concerned that "smart gun" technology, even if someday proven, may give owners a relaxed sense of duty when it comes to how they store their firearms.

Owner recognition technology is being researched and developed for closer examination and testing. It remains to be seen, however, whether technological additions to a firearm can prevent unauthorized use of the firearm while not compromising the firearm's reliability or design functionality. These concerns should be fully answered before any owner-recognition technology is introduced onto the market.

RADIO TRANSMITTER

Inside the grip of the firearm is a receiver that emits a radio frequency to a wristband transponder worn by the user. Only the user with the wristband would be capable of firing the gun.

EXAMPLES OF CONCERNS

- The wristband is large and bulky and could be taken by an unauthorized user if left lying around.
- Not 100 percent reliable.
- The gun cannot fire except from the hand on which the wristband is attached. In other words, if forced to fire the gun from your other

hand, the firearm would not work. If this is addressed, the gun could be fired by others when in close proximity to the wristband, such as during a struggle.

- Power source failure. What happens to usability of the gun when the power source fails?
- What happens to the technology after firing several hundred rounds through the firearm?
- The wristband is too big and bulky to be worn comfortably or easily.
- Can someone develop technology designed to defeat, interfere with, or jam this radio frequency technology?
- Is it possible to design and manufacture electronic componentry that can function every time in the harsh environment of a firearm, including resistance to shock, sand, water, icing, heat and other environmental extremes?

VOICE RECOGNITION

A voice recognition chip is implanted in the firearm allowing only the authorized user to fire the gun upon issuing a recognized verbal command.

EXAMPLES OF CONCERNS

- Not 100 percent reliable.
- What happens to the technology after firing several hundred rounds through the firearm?
- Power source failure. What happens to usability of the gun when the power source fails?
- What happens when a user's voice changes pitch, tone, or other attribute due to stress, injury, illness or other situational or environmental pressure?
- Would the gun be capable of being fired forever after the voice command is issued, or would it "freeze up" after a certain amount of time?
- Would the technology recognize whispers, loud yells, or any voice inflection other than what is considered normal speaking tone?
- Is it possible to design and manufacture electronic componentry that can function every time in the harsh environment of a firearm,

including resistance to shock, sand, water, icing, heat and other environmental extremes?

FINGERPRINT RECOGNITION

Fingerprint Recognition Technology would put sensors on the gun's grips to identify certain fingerprints as authorized users.

EXAMPLES OF CONCERNS

- Not 100 percent reliable.
- What happens to the technology after firing several hundred rounds through the firearm?
- What would happen if a user's fingers were disfigured due to a cut, scrape, or burn?
- What if the user was wearing gloves due to inclement weather?
- Would the technology recognize both right and left hand fingerprints?
- Firearm gripping techniques vary, particularly in times of stress, and may not present the finger in a position allowing prompt identification.
- Power source failure. What happens to recognition and usability of the gun when the power source fails?
- Is it possible to design and manufacture electronic componentry that can function every time in the harsh environment of a firearm, including resistance to shock, sand, water, icing, heat and other environmental extremes?

LOADED CHAMBER INDICATORS

Loaded chamber indicators (LCI) are devices built into a firearm that indicate whether a round is in the gun's firing chamber. The LCI is typically a small pin or lever in the slide that appears when a round is in the firing chamber. Some centerfire firearm manufacturers use this technology. Loaded chamber indicators are impractical for use on firearms that fire 22 caliber rimfire cartridges due to the primer being within the rim of the shell casing. LCI works off the rim of the case head. If there is a

misfeed, the LCI may strike the rim (acting like a firing pin) and ignite the primer causing an accidental discharge and a dangerous situation.

A major drawback to the LCI is that the user must be familiar with firearms to understand what the indicator means. A child, curious youngster or other person unfamiliar with firearms who comes across a firearm with a LCI will not know what the dot on the rear of the slide means. If the user is sufficiently trained and familiar with firearms to know about the LCI feature, the user would prefer a visual check over a LCI to determine if a round is chambered.

Loaded chamber indicators are only available on semi-automatic handguns. On revolvers, the cartridges in the cylinders are visible. The user's eyes are the loaded chamber indicators for a revolver. LCIs cannot be used on a firearm that has a tip up barrel (several manufacturers' models employ this feature).

Another concern is that the loaded chamber indicator only signifies whether a round is in the chamber; it does not mean that the firearm is incapable of discharging that round. A LCI is not a "safety" in the traditional sense (that is, a device built into the firearm that prevents the gun from discharging a round). It is simply an indicator that requires basic firearm knowledge to properly interpret.

Several major manufacturers of firearms include a loaded chamber indicator in their designs. Others do not. As a matter of policy, the Sporting Arms and Ammunition Manufacturers' Institute does not advocate, nor disapprove of, the use of LCIs, but does question whether their use serves any safety purpose. We understand the concern of some manufacturers who fear that the inclusion of LCIs will lead to a relaxed sense of awareness and safe firearms handling. Reliance on an LCI as the sole determinant of whether a firearm is loaded is unwise and potentially dangerous and should never replace the basic safety rule requiring careful examination of the firearm and opening the action to be completely sure

the gun is unloaded. Such a device is no excuse for overlooking the number one rule of firearm safety: treat every gun as if it were loaded. Firearm manufacturers presently design all guns to be easily checked to determine if they are loaded.

For people familiar with firearms, a loaded chamber indicator can be a helpful visual cue to help the user see whether a round is in the chamber, particularly at night. Loaded chamber indicators, however, are not safeties, nor are they effective if the user has no familiarity with firearms. Loaded chamber indicators should not be a substitute for the common-sense rules of safe firearm storage and handling.

MAGAZINE DISCONNECT FEATURES

A magazine disconnect feature does not allow a user to fire the gun without a magazine (ammunition feeding device) in place, regardless of whether a round is in the chamber (in position to be fired). While some firearms are equipped with this feature, most federal, state, and local law enforcement agencies and the military specify that firearms not be equipped with magazine disconnect devices.

Magazine disconnect features are not used frequently for many reasons. Among them are the following:

- The gun is useless if the magazine is lost or forgotten.
- The user cannot fire the gun if the magazine is dropped while reloading.
- If a round is inadvertently left in the chamber and a person inserts an empty magazine into the firearm the gun can fire. One obvious concern with magazine disconnect features is that determining whether the gun is safe becomes linked to the presence of the magazine as opposed to actually checking the gun, opening the action, and making sure it is unloaded.
- If the magazine disconnect fails, it usually does so in the "fire" position because of rust, fatigue, or debris.