

# Toothprints: A Comprehensive Recovery, Identification, Forensic, and Prosecution Tool

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**T**he Child Identification Program (CHIP) sponsored by the Massachusetts Freemasons and supported by the Massachusetts Dental Society is now recognized as one of the most comprehensive child recovery and identification programs in the country. CHIP is hailed by recovery officials of the National Center for Missing and Exploited Children, as well as law enforcement, dental, forensic, and prosecution authorities alike.<sup>1</sup>

The National Center for Missing and Exploited Children says that 2,000 children are reported missing every day in the United States.<sup>2</sup> Currently, there are 99,000 missing children in this country.

Historically, dentists have helped law enforcement agencies by providing dental information when requested, but more recently, dentists have been participating in community-sponsored child identification programs across North America for prevention, education, and recovery purposes.<sup>3</sup>

Thermoplastic Toothprints® bite impressions add potential recovery, identification, and prosecution capabilities for lost, missing, or unidentified children. A Toothprints impression records individual tooth characteristics, tooth position within the arch, upper and lower teeth relationships, gum contours and anatomy, missing tooth structure, mamelons, missing or

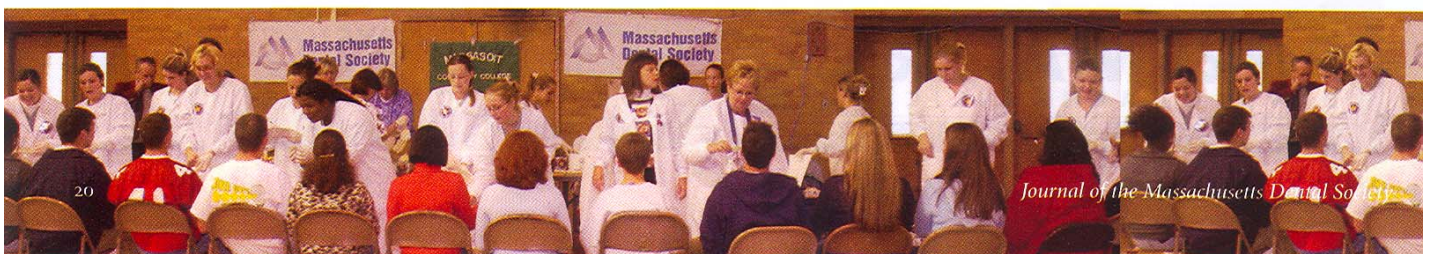
unerupted teeth, as well as marginal outlines of individual restorations and dental sealants.

Since so many American children are now cavity-free and filling-free due to fluoride, dental sealants, and good patient education, dental charting and radiographs may not be enough to make a positive identification.

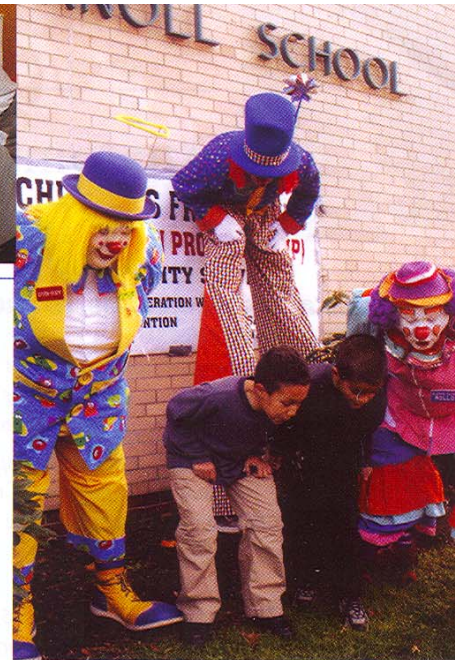
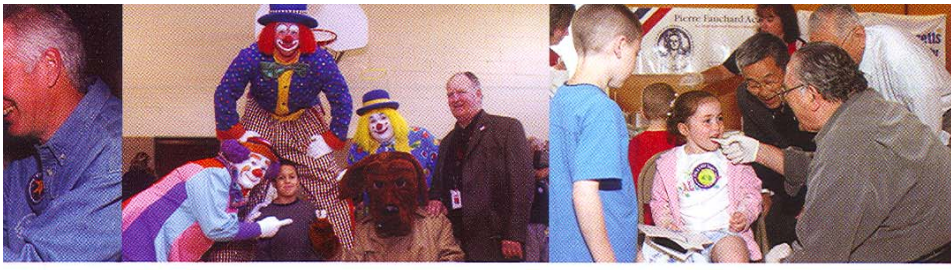
Currently, three methods of interpreting Toothprints have been reported in the literature:

- Pouring a Toothprint with polyether impression material, and visually comparing concordant points with the host<sup>1</sup>
- Flash CT scans, a three-dimensional scanning system with proven applications in the dental field<sup>4</sup>
- Measuring line lengths and angle measurements from Toothprints<sup>5</sup>

Toothprints should not be considered a substitute for thorough dental records, charting, and radiographs. Rather, they should be considered an extremely important adjunct to dental records and could prove invaluable in situations where there are no dental records, or the records are lost or delayed. Delayed records have been reported multiple times during mass disasters or when dentists have gone on vacation or taken long weekends, making dental records unavailable for identification teams. Toothprints, if available, could help in such situations, since family members—and not a third party—keep them.







At a CHIP event, children are taught to leave a "spit trail" behind in the event that they are abducted or lost.

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At Ground Zero in New York on September 11, 2001, a dental practice and its records were destroyed when the first World Trade Center tower imploded. Perhaps Toothprints could have helped the identification process for the hundreds of whole teeth recovered. Dr. Jeffrey Burkes, New York state forensic dentist and diplomate of the American Board of Forensic Odontology (ABFO) who orchestrated identifications at Ground Zero, has endorsed the CHIP program, which received major TV-network news coverage for its launch in New York at the New York Greater Dental Meeting in November 2003.

Some children in Massachusetts have no dental records due to financial, socioeconomic, or healthcare access reasons. For many of these children, Toothprints may be the only dental record available to identification teams. Currently, more than 213,000 children have been toothprinted in Massachusetts through the CHIP program alone.

### Spit for Safety

In addition to aiding in identification, Toothprints can also provide scent-tracing capabilities, which can help track down missing children before it's too late.

Scent-tracing capabilities of Toothprints have previously been documented in the literature. In one instance, a tracking dog scented a 1-year-old Toothprint and was able to track a child in a ballroom full of 500 seated persons in 4.5 minutes.<sup>6</sup> In another case, dogs were able to track children by scenting 8-month-old Toothprints for 200 yards in 20 mph winds "without any problems."<sup>7</sup>

Children participating in CHIP programs are taught to "leave a spit trail" or "spit for safety" if they are abducted or lost in the woods, which leaves not only a scent but also DNA evidence for identification and prosecution purposes.<sup>8</sup>

To date, 45 public school systems in Massachusetts have adopted the CHIP program for all students between kindergarten and grade 12. The Massachusetts Dental Society was presented the Special Recognition Award from the National Center for Missing and Exploited Children for its "unflinching devotion and continuing labors to protecting children" at New England CHIP Day in May 2004.

Edward Flynn, the Massachusetts secretary of public safety, and Dr. Kate Crowley, state forensic dentist and ABFO diplomate, have both pledged their

strong support for the CHIP program, as have many district attorneys and sheriffs.

With the ever-increasing awareness of natural and terrorist disasters, Toothprints and the CHIP program will continue to spread across organized dentistry in North America as scientific validation of their usefulness continues to grow. ■

### References

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